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An Introduction

TO A DEBATE ON

THE VALUE AND LIMITATIONS OF SANATORIUM TREATMENT.

Delivered before the Medical Society of London on Nov. 12th, 1917,

BY T. D. LISTER, M.D. LOND., F.R.C.S. ENG.,
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GENTLEMEN,—When I was asked by your President to make some remarks introductory to a discussion on the value and limitations of sanatorium treatment, I was struck by two things. The first was the opportuneness of such a discussion by this old, independent and responsible society. It was surely a keen sense of the present need of reconsideration of this matter that led your President to select it. The second was the opportunity afforded to me of airing and no doubt clarifying some of my own rather heterodox views in a pleasant atmosphere.

THE PRESENT POSITION.

No longer, unfortunately, can we speak of the losses by tuberculosis as being greater than the ravages of war. War has crippled our resources for dealing with social problems, of which tuberculosis is perhaps, if not certainly, the greatest, at any rate the index disease. War has done more, because it has led by its disturbance of pre-existing social conditions to an increased incidence of the disease. We are therefore wise to take stock of our present methods and endeavour to form a judgment as to their value, and limitations.

From the annual report for 1916–17 of the medical officer of the Local Government Board we gather that the deaths from pulmonary tuberculosis, as compared with 1913, have increased by 1582 in 1914, 4621 in 1915, and 4490 in 1916 Representing the experience in 1913 by the relative figure 100 the deaths have increased by no less than 12 per cent. Many explanations are suggested in the report. This increase has been associated with an excessive mortality from influenza, as was seen also in the years 1890–91–92 and in 1899–1900. The report emphasises the fact that both men and women in industrial employment have been exposed to conditions leading to the spread of tuberculosis and to the calling into activity of latent disease; also that the record would almost certainly have been worse but for the organised effort to improve housing conditions in areas with populations swollen by war work; also that there have been overwork and exposure to irritating dust, and, owing to migration, overcrowding under conditions unfavourable to health; also that high wages have led many to refuse sanatorium or other systematic treatment and to the employment of large numbers of semi-invalids.

For the moment my only comment is to point out how these remarks emphasise the dependence of tuberculosis mortality on environment rather than on infection.

Since 1911 the number of beds available for the treatment of tuberculosis, supposed to be in the main sanatorium beds proper, has doubled, and is now 11 893, as against 5500. A high proportion of the patients in these beds have been of what is known as the hospital type, which are defined as cases of advanced disease or of chronic consumption often requiring prolonged treatment, especially at the request of the medical officers of the institution. Not infrequently the same bed is occupied by a single patient for six or nine months who should have been replaced by earlier cases. Tuberculosis dispensaries have increased over twelve-fold in the same period, from 25 to 30 in 1911 to 371 in 1917.

THE LANCET on Oct. 20th called attention to certain criticisms suggested by the collation of this greatly increased activity in measures supposed to be directed towards the administrative control of tuberculosis with the increased mortality experienced.

ADMINISTRATIVE METHODS.

Those interested in departmental explanations and deductions should study the report carefully. A large part is devoted to meeting such criticism as was inevitable. I think the key to what seems to me to be a confusion of ideas in the report is to be found in what I regard as one of the most dangerous doctrines in modern public health administration—namely, the statement made therein that measures for the treatment and prevention of tuberculosis are to a large extent identical. This doctrine, if by treatment is meant therapy, is capable of indefinite extension in this and many other diseases. If adopted generally it could only have the effect of placing our great liberal profession of medicine entirely and permanently under red tape rule. It grieved me to hear Sir William Osler support it in regard to syphilis when he delivered the Lettsomian lecture in this room. If treatment does not mean therapy, the allocution is to my mind mere phrase-mongering.

I cannot conceive that treatment and prevention should be regarded as identical. The former is our daily ambulance work, dealing with the units of mankind, and therefore possessing and demanding the greatest human interest. The latter is a matter of strategy and large ideas, ignoring the units and demanding the cold forces of bureaucracy. Many recent developments in the control of clinical work by various departments, arising out of ill-considered agitations, are, in my opinion, leading or likely to lead to a lack of progress in medicine, by creating stultifying cul-de-sac medical occupations, the accumulation of enormous masses of almost useless reports, and a smug complacency in their publication.

Treatment may some day be coördinated with public health work, factory and school work, under a Ministry of Health. At present we see a series of different authorities trying to strengthen their hold on the practice of medicine. Some will, no doubt, in time produce the inevitable statistics of the number of cases treated. Such statistics may unwisely be regarded as partly justifying a claim for expansion into a ministry, endowed with powers over other pre-existing authorities. I hope the coming Ministry of Health will be a bigger and greater thing that the result of inter-departmental rivalry with the winner on top.

No better test subject of administrative methods could have been selected for discussion than the part played by the sanatorium in the control of tuberculosis. It involves a study of its value and limitations both on the clinical or therapeutic side, in relation to the individual patient, and on the preventive or administrative side in relation to the community. It is upon the Fellows of this society and upon those who will collaborate with them to-night and at the subsequent meeting that the onus must fall of making the discussion valuable. I look to those who will follow and correct me to bring forward a diversity of opinions worthy to place before the Medical Society of London and its distinguished President. On no possible subject would it be easier to raise wide issues. Whenever resistance to the temptation to digress becomes impossible, the remedy lies in the hands of the President himself. I have no doubt his kindly warning will suffice to bring us to our proper bearings.

Having thus divested myself of all responsibility as to the value and limitation of the discussion, I will endeavour to put before you some of the questions that seem to call for expressions of opinion. My shortcomings are acknowledged in advance, and I hope that any point overlooked, which comes within the scope of our subject, will be brought forward by those having greater knowledge.

When I asked myself what I thought of the value and limitations of sanatorium treatment I hesitated and was lost in subsidiary questions. These concerned the position of the sanatorium in its therapeutic uses on the one hand, and its national value on the other.

THE VALUE OF THE SANATORIUM IN THERAPY.

1. Selection of cases.

The careful prognostic selection of cases for sanatorium treatment suggested an attractive chain of reflections until I remembered that experts accustomed to handle every group would be here to place before you actual experiences. From them we shall learn how best to advise patients of any clinical and social class who may be in doubt as to entering a sanatorium.

I may be permitted to maks one comment. Though the reaction of the human organism to pulmonary tuberculosis is the chief guide in estimating the possible results of sending patients into institutions, we must take into account their

existing environment. Other things being equal, benefit will accrue from sanatorium treatment in proportion as this supplies a better environment. It is impossible to overestimate the importance of the physician in charge of a sanatorium as part of that environment. I think we shall benefit any suitable case by so much as we are able to improve management and hygiene. I seem to have seen better results from sanatorium treatment in certain bad cases, classified according to the academical rules, when they have come from the industrial group, than in certain good cases coming from what one scarcely dares to call nowadays a higher social class. The industrial patient sometimes gets a better chance because he gets a bigger change.

Whether this belief is justified or not we shall learn during the discussion. We shall be glad to hear all who will speak to us with authority as to the effect of selection of cases on the value and limitation of sanatorium treatment.

SANATORIUM THERAPY AND TREATMENT AT HOME.

The relative value of treatment at a sanatorium as compared with treatment at home arises as a natural sequence of the consideration of selection. About a year ago I asked a senior lecturer on medicine at a great London school what he taught students on this point. He replied that he met inquiries with the somewhat humorous dictum that a sanatorium is a very suitable place for consumptive paupers or fools. There is a germ of truth in the first half of his selection. Not seldom have I met with a private medical attendant who has warned patients against going into a "hotbed of the disease." Occasionally I have allowed my opinion to be biassed by a patient or a doctor in whom I have had confidence, so that I approved of treatment at home. Usually, after taking precautions to secure adequate home treatment I have had reason for regret. Perhaps the precautions were not adequate. Possibly some of these cases, even if sent away, would have ended as sanatorium failures. All the details which make up the routine of the health re-education of the consumptive must attain to a higher power in the sanatorium. Compared to home treatment, there is as much difference as between a thorough school education and a few interrupted private lessons.

But I think too much is sometimes claimed as the result of the institutional training of patients. The patient nearly always thinks in terms of treatment and cure. The lessons learnt are more often than not, like those learnt at school, largely forgotten after the leaving examination. The short educational treatment in sanatoria of the industrial class of patient is even a greater failure. Few medical officers are able to impress upon dull minds any reasonable view of the nature and needs of this disease in four or even 12 weeks. This is not to be wondered at, seeing that a medical qualification and years of general clinical work only too often fail to do so among ourselves. The skilful private health-tutor is a rare bird. The born leader and teacher is not found even in every sanatorium.

The time devoted to sanatorium treatment should be much longer than it usually is for every class of patient. It need not necessarily be in the same institution throughout the whole period to secure the best results. To follow up sanatorium treatment at home successfully requires the highest self-discipline, a quality not more conspicuous among consumptives than among others. Hence I do not attach much value to the "rabbit hutch in the back garden" type of home treatment.

Home treatment demands self-training and self-discipline even more of our own profession than of the patient. To emphasise the value of open air is a good thing, but it is only a small part of sanatorium therapy. Continual scientific guidance by a trained medical man is an essential concomitant before much is to be achieved clinically. Home treatment and after-treatment suffer from the lack of thorough teaching of common diseases. An adequate knowledge of these should be an essential requisite in qualifying examinations. The General Medical Council could do more by amended regulations than all the private and public machinery set up hitherto for the treatment of tuberculosis.

Home treatment before and after sanatorium treatment has a powerful effect on results. It is possible to argue that sanatorium treatment can be carried out at home. But those capable of carrying out sanatorium treatment efficiently are even rarer in domestic practice at present than in institutions. Hence arise the frequently expressed aspersions on the general practitioner and the setting up of an ever-increasing series of costly contrivances, such as tuberculosis officers, dispensaries, care committees, and after-care colonies. The original value that might have been ascribed to the tuberculosis dispensary seems to me to have become obscured by its clinical expansions. I will refer again later to these, but here I will only say that sanatorium treatment cannot, as a rule, be carried on at home because neither the home nor the treatment available is likely to lead to success. This is, of course, only a broad statement referring to the mass of disease and the majority of homes where it occurs. I do not ignore certain excellent experiments.

Statistical Data.

The value of sanatorium treatment in comparison with home treatment might, perhaps, be estimated by results. These results may deal with the conditions at the end of treatment or with the after-history.

Of the results at the end of treatment I do not know of comparable statistics. Sanatorium statistics should be studied with philosophic doubt. I trust that when we hear the figures relating to immediate and remote results from those speakers who will produce them we shall not let this doubt diminish the importance of the lessons to be drawn from them. The doubt in my mind at the moment arises from a lack of knowledge of successful results when cases are not treated in sanatoria. We cannot ignore pathological evidence. Healed lesions without a history are commonly found. "Everyone has his tubercle." Some seem to have had a good deal and yet recovered to die of something else.

I would like to know, first, the recovery rate of untreated cases classified according to the academic rules. Are there not many cases that would get well anywhere, even, if it exists, in a badly managed sanatorium? I would like to know what margin of sanatorium successes really exists over and above the unknown recovery rate of each group. As I cannot know I may be permitted to doubt. I will allow a large margin. Secondly, we want careful practitioners, not addicted to the "hotbed of disease" prejudice, to tell us how many cases get well when treated at home. Is there no James Mackenzie of Tuberculosis? If there be many such cases one appreciates and sympathises with the desire of sanatorium doctors to get their patients in the earliest possible stage. Early cases must furnish the best recovery rate, whether untreated or treated at home or at the sanatorium. Improved statistics increase the moral force of the object-lesson afforded by the sanatorium, and are therefore desirable. Thirdly, I would like to ask whether financial considerations do not sometimes prevent patients from receiving full benefit from sanatorium treatment? As to comparative cost of home and sanatorium treatment there is much to be said by those speakers who handle various groups of patients. I should say that efficient home treatment was more expensive than at the sanatorium. The high comparative cost of sanatorium treatment is, I think, largely apparent and not real if anything like the same advantages are to be furnished at home. There is one difficulty which applies to all members of the community dependent for a living on their own efforts, and that is the prolonged absence from home required by adequate treatment in a sanatorium. This can only be overcome, or rather palliated, by doing one's best for as long as the patient can remain and trying to secure sympathy and understanding from the patient of what one is doing and teaching. For cases that are improving sanatorium treatment is more often cut short against the wishes of the doctor in charge than not. This desire of the sanatorium doctor to get the best results for his patients is used as an argument in the Local Government report for the earlier discharge of cases to enable them to be replaced by more responsive patients. This seems to lead us back to the difficulties arising from public and professional ignorance. The early case is difficult to get hold of.

Of the results of the after-history of sanatorium cases we hope to hear figures during the discussion. It seems to me that the justification of the sanatorium by the after-history of the patients is an eminently important thing to establish. Personally I have been rather depressed by the after-history of sanatorium patients, even when discharged from institutions as "arrested." The same deductions ought to be made from the list of successes as were suggested for the immediate results. In my experience after-history largely depends on opportunity. Where patients must go back to the same

houses, habits, and haunts wherein they previously lost their resistance they will lose it again. Very few patients can or will change their environment and occupation afterwards. If the occupation were conducted in such a manner and the general environment were such that the resistance regained were not lost the after-history would be better. It seems clear, therefore, that it would not have been lost had these conditions existed before the patient lost his resistance to the disease. Other considerations, of course, arise, but I think most sanatorium doctors would agree that some of their best efforts are ruined when the patients leave. We shall be glad to hear their views.

Special Treatments as Aids to Sanatorium Therapy.

We may ask ourselves whether the value of sanatorium treatment can be increased by the various special "treatments" that have been introduced. More remotely we might suggest that some of these methods may properly be used to replace the sanatorium altogether. Not yet.

A number of special treatments have been introduced from time to time. There are certain points of unanimity in the desires of those advocating special methods. They like to secure very early cases, and they urge the necessity of hygienic methods being employed as accessories. There seems to be a considerable amount of uniformity in the successes obtained in corresponding classes of cases, provided the hygienic or sanatorium method is not omitted. I will not say this is a suspicious circumstance, but I return to my confession of ignorance as to the recovery rate of corresponding groups of cases however treated or untreated. I fear that the public clamour for "cures" may sometimes lead to biassed views among those of us who use special methods.

The late Sir James Goodhart said once that when we come in contact with those who advocate "treatments" we are liable to find ourselves in queer company. This opinion was shared, but differently expressed, by Sir Samuel Wilks. We may perhaps regard the hygienic method of raising resistance as a mere accessory. But I think most of us would say that we have sometimes seen it as the principal factor in the achievement of the results ascribed to special methods, and that these "treatments" are doubtful aids.

I think we should all like to know where we stand in regard to the use of tuberculin. Is the value of the sanatorium method increased by using any of the derivatives of the tubercle bacillus? If so, what are its uses in the many cases of mixed infection, and the relatively few cases where a pure infection can be reasonably inferred?

The association of vaccines for mixed infection, with tuberculin, is a difficult, costly, and complicated business. The very few "successful" lung cases I have seen treated thus are all dead of their disease. Possibly others have had a more fortunate experience. If this is so then these things should be used more largely than they are at present in sanatoria. Personally, I consider that such methods are only adapted for a very small proportion of the total mass that come before us in institutions, that they are better carried out there under full control than in the consulting room or home, except under rare conditions, and that therefore the value of sanatorium treatment can be little affected by them.

Arising out of the use of tuberculin is the question of the precise value of that part of sanatorium treatment which is called auto-inoculation. Is this theory firmly based? What is the actual process, compared to the use of any of the known varieties of derivatives of the tubercle bacillus?

Sanatorium Therapy and Diet.

Closely connected with the increase of resistance that one sees as the result of sanatorium therapy, whether accompanied by the use of vaccine, tuberculin, or auto-inoculation, is the nutrition of the body. May not the carefully planned food scale of the sanatorium, with general attention to digestion, rest and exercise adjusted to meal-times, account for many of these alleged successes? I will not enter into the question of the attention given to nitrogenous food. We know very little about the hæmatology and metabolism of these patients. Did we know more we ought perhaps to re-classify our cases in the light of such knowledge before we can ascertain the real value of sanatorium treatment. There must be some proportion of patients in whom an improved dietary properly regulated is sufficient to turn the scale in the right direction. There must be some in whom improved nutrition, and, if we like to say so, consequent formation of immunising bodies is impossible because of an original fault in their bio-chemistry. If this is so, deductions must be made from the successes on the one hand and from the failures on the other before we can have a real knowledge of the value of the sanatorium.

A more practical question is occasional difficulty arising from the food in a sanatorium being badly cooked, badly served, and, from ignorance of, or lack of sympathy for, human weaknesses, from an unnecessary monotony in the daily menu. For the convenience of the staff and store room there is a melancholy recurrence of the same food after the same intervals in some sanatoria. Loss of interest and loss of appetite result. Patients, staff, and doctors often become institutionalised. There is always a risk of deterioration in official clinicians.

As much as in any other detail the personality and knowledge of the medical officer is all-important in matters of diet. But apart from extreme methods such as zomotherapy, now practically out of date along with over-feeding and excessive milk drinking, diet is part of the general hygienic method.

Sanatorium Therapy and Family History.

The value of sanatorium treatment as affected by family history may conveniently be considered after these questions of nutrition. In the sanatorium inherited habits of unbalanced feeding can be adjusted in the same way as other errors. Diet is often a matter of family tradition. Further, we know that a type of bio-chemistry is as readily inherited as a blue eye or a pug nose. The manner in which a family resists or succumbs to tuberculosis is of great importance in prognosis. There are patients in whom recovery seems to be hopeless when the disease is once developed because of the strain from which they were bred. Is not this question of importance in making deductions from the figures of failures when we attempt to make a valuation of sanatorium treatment? Vice-versa, is not a history of family recovery of equal importance? The adjustment of sanatorium statistics as compared with other modes of treatment seems to me to demand many difficult and complicated inquiries.

Sanatorium Therapy and Pharmacy.

Another matter in which the value of sanatorium treatment is difficult to assess is the importance to be ascribed to the use of drugs. So far I do not see much difference in the results attained by those who give much or little medicine, whether by the mouth or in other ways. I do not mean the use of medicine for intercurrent conditions but only such as are claimed to have a special effect on tuberculosis. He would be a bigot who, because a patient was in a sanatorium, would deny him such help as could be afforded by pharmacy for ailments properly so treated elsewhere. I need not discuss the many drugs that have been used. The legion of derivatives from creosote have almost succumbed to the absence of the German sample post. Creosote itself is still variously used. The so-called nascent iodine treatment seems to be not all that was hoped. I am told by those seeing it in use alongside control cases that there are no reliable contrasts. The presence of latent syphilis should be excluded before ascribing any improvement under this method to its effect on tubercle.

The true position is that drugs are accessories to the hygienic method and not the converse. The advocated remedies seem to have their entrances and their exits. Unless I am misguided, the hygienic method remains of the same value, whatever that may be, with or without them. It will be useful to learn from those taking part in the discussion how much importance they assign to pharmacy in achieving their results.

Conclusions as to the Value and Limitations of Sanatorium Treatment.

There are no doubt many questions which I have omitted in trying to point out the difficulty of assessing sanatorium treatment. I trust these will be recognised.

Meanwhile I will say that the value of the institutions clinically lies: (1) In the persons of their medical officers who can devote a relatively greater degree of special skill in management to their patients than they can usually get at home; (2) in their surrounding and equipment which offer a relative degree of greater hygienic protection; and (3) in their facilities for affording a better health education.

Their limitations arise from (1) certain deficiencies in medical education; (2) what may be called the lack of a

health conscience among the people; and (3) economical consideration.

THE SANATORIUM AND PREVENTION.

Coming to the position of the sanatorium in the preventive campaign I fear I shall be guilty of even more sweeping generalisations as a basis for discussion than those I have made in appealing for enlightenment as to its clinical value. By prevention I shall imply the diminution of the national loss due to tuberculosis,

It is a very large question. It raises the issue of whether we are on the right lines in dealing with this disease by the continual multiplication of institutions for treatment. At the outset I would like to refer again to the report of the Local Government Board.

The report contrasts the acute Infectious diseases with tuberculosis, but I think insufficiently. In regard to fever isolation hospitals it says:—

"Although these institutions may not have completely fulfilled expectations in the amount of reduction of infection secured, they have done great work in this direction and have made themselves indispensable under modern social and industrial conditions. In the acute infective diseases the onset of secondary cases occurs after a few days' incubation; in pulmonary tuberculosis there may be a latent period stretching over years, and cause and effect may be difficult or impossible to connect. ..... The bearing of these facts on the institutional treatment of consumption is obvious. ..... They cannot be institutionally treated continuously, even if they were willing, and there is no need for residential institutional treatment during the large part of their sick life, assuming that they follow out the simple instructions in which they have been previously educated, preferably in a residential institution. ..... The short term of stay in a sanatoria or hospital for tuberculosis is stated to render home supervision more efficient. ..... A large proportion of the infective lifetime of every consumptive and the whole of the lifetime of some consumptives will necessarily be spent at home, if possible with skilled supervision and domiciliary treatment. An essential part in the prevention of the spread of tuberculosis consists in housing patients under conditions in which they will not spread infection. Measures for securing that the consumptive shall not be a source of massive infection must be reconciled with this economic consideration."

Certain comments seem to follow on these sentences gathered from a report which I confess I have found difficult to follow in its deductions. For acute fevers I think we are prepared to agree that institutions *have* made themselves indispensable under *modern social and industrial conditions*. Are they indispensable in a disease with a latent period stretching over years? How is skilled supervision and domiciliary treatment to be secured under present circumstances and the prevailing conditions? From the very nature of things the tuberculosis officer and nurse can only deal with a fringe of the cases. The private medical attendant is largely untaught by those responsible for his professional equipment, and yet must deal with the great mass of domiciliary cases. There are certain reforms indicated here which if carried out would diminish the need for these costly institutions, admittedly inadequate to secure segregation, full treatment, and arrest of this chronic disease. I quoted earlier the statement in the report that treatment and prevention are largely identical. But the report itself states that "difficulties arise when the tuberculosis officer concerns himself with treatment while giving little attention to hygienic circumstances." I have said elsewhere that the tuberculosis officer would often be better employed in visiting, helping, and encouraging the medical practitioners in his district, than in visiting patients, examining contacts, and giving doles of medicine and what not at the dispensary. I am glad that a belated acknowledgment, so far as it goes, of the essential difference between treatment and prevention was thus recognised in the report. The tuberculosis dispensary sometimes reproduces the old chest hospital out-patient room too closely, the condemnation of which was one of the reasons for its multiplication. Sir Robert Philip in a recent letter to THE LANCET (Oct. 27th) once more called attention to the original purposes of the tuberculosis dispensary. I think he had reason.

In addition to the references already quoted from the report in regard to modern social and industrial conditions it is claimed that during the last 20 years—

"There has been increasing treatment and segregation of patients in Poor-law infirmaries and other institutions, who would otherwise have been under unsatisfactory domiciliary conditions, and that this segregation is largely responsible for the decline in the death-rate during the same period, notwithstanding increasing urbanisation and its associated relatively high mortality from tuberculosis."

Later, attention is drawn to the housing conditions of the people as revealed at the last Census of England and Wales, when 12·3 per cent. of the population lived in three-roomed dwellings.

Infection and Environment.

I suppose the implication is that institutional treatment, with all its drawbacks and with its increasing control of clinical work under Local Government Board conditions, is easier to develop than improvement in social and industrial conditions. One may be grateful for the facts without accepting the inferences in the report.

Surely pathology and morbid anatomy have proved to the satisfaction of students of tuberculosis that the bacillus is a comparatively harmless pest to the great majority of us. Urbanisation has been shown to be associated with an increased relative mortality, and therefore inferentially increased morbidity, but it has also been shown to be associated with the fall of the death-rate in urbanised countries. Mankind is reacting to the dissemination of tubercle. Dr. Mott once said that civilisation is syphilisation. It is certain that urbanisation is tuberculisation. The gradual fall of the total death-rate is, I think, due to the creation of a race resistant to tuberculosis by the ruthless methods of Nature. Perhaps these methods have involved prophylactic infection.

If you were to assist Nature there is, perhaps, more to be said for prophylactic inoculation than for increased institutionalism in this disease. Tuberculosis is not only a latent condition in individuals, but a latent disease in communities. Morbidity and mortality have surely been proved to be independent of the mere fact of the occurrence of tubercle infection. A great mass of the loss from the disease as shown by morbidity and mortality has as surely been proved *ad nauseam* to be due to social factors.

In the majority of cases sanatorium treatment suffers in the public estimation because the resistance which may have been regained is more or less rapidly lost on a return to the old surroundings. We may plead for better domiciliary treatment and for a larger number of skilled supervisors, but our hands are tied by the lack of local and central concentration on environment in the fullest sense of the word.

Private practitioners tell you that their hands are also tied, and sanatorium medical officers are always regretting the difficulties of many of their patients on leaving the institution. The general practitioner knows what all students of the morbidity and mortality of tuberculosis also know. The Local Government Board has supplied us with invaluable material. We have only to study the many district maps that have been made of the incidence of mortality, or to analyse the occupational figures supplied in the decennial reports of the Registrar-General, to be convinced of these facts. Clinical experience affords a few exceptions to the general rule. These may be due to various causes in individual instances. But I have no doubt that if the truth were known they could, so far as infection is concerned, be traced to the constant supply that comes from herded but motile consumptives.

How can treatment at any number of institutions prevent national loss from a disease the occurrence of which, *as a disease*, is due in the main to factors other than infection? I have the gravest doubts of the value of trying to control a leak by swabs, or of winning a campaign by any system of hospitals and ambulances.

Dependence of Tuberculosis Problem on Social Factors.

The value and limitations of the sanatorium in regard to prevention lie in a much bigger consideration than the multiplication of their number on a false analogy with the acute infections, however qualified.

The real value of the sanatorium lies in the fact that it has demonstrated how resistance is regained. Inferentially it demonstrates, therefore, how it was previously lost. There has been a lack of recognition of its real significance. It presents the contrast to all those conditions which bring about loss of resistance. The sanatorium furnished its object-lesson long before the tuberculosis dispensary was originated. The lesson was not grasped. The tuberculosis dispensary should have been created and developed, in every

district as an efficient bureau of information: it has become too much of a clinical centre. It is a peculiarity of vicious circles that they necessarily tend to enlarge. There seems to be no end to the vicious circle that has been grafted on to the tuberculosis dispensary. It has become the centre of a whole series of ever-extending clinical efforts. As Sir Robert Philip truly says, these, the sanatorium, the hospital, the tuberculosis school, the farm colony, the care committee, &c., are well known. There are not nearly enough of them yet if we are to continue to be obsessed with the need of fighting infection and to forget the relative harmlessness of this acid-fast bacillus in comparison with the other factors in the disease, against which this clinical work is not only a merely palliative measure but a very powerful demonstration.

The present increase in the mortality of tuberculosis I believe to be temporary and to afford no evidence in particular of the value or worthlessness of the present administrative measures, including increased sanatorium beds and manifold dispensaries. But it emphasises the dependence of the tuberculosis problem on social factors. It is these that require investigation and appropriate measures. No amount of institutions will affect them. I think the present increase in mortality will be followed eventually by a more rapid fall in the death-rate. I do not think this improvement will be apparent at once, nor do I think that it will be long delayed. I am sure it will be ascribed in reports to whatever administrative measures are undertaken. If it occurred after a campaign, however begun so long as it was consistent against the conditions which we know definitely to be associated with high local or occupational death-rates, I should myself claim the improvement to be due to the object-lesson afforded by the sanatorium.

There is a long way to go yet, but the sanatorium will have achieved its full value, and that will be unlimited, when everyone lives and works under sanatorium conditions and every practitioner of medicine is a sanatorium doctor.

TARTAR EMETIC IN TREATMENT OF MALARIA.

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IN view of a paper by Sir Leonard Rogers[1] the following eight cases were treated intravenously with tartar emetic. They were treated during February, 1917, and include infections both with benign and malignant tertian parasites. All had a previous history of attacks of malaria. During this period, though relapsing malaria was frequent, it was clinically of a mild type and responded well to treatment with quinine by mouth. The cases chosen for treatment with tartar emetic were selected in so far that only those showing a fair number of parasites were taken. In all some 12 cases were selected for treatment, and the results of eight of these are published in detail.

The tartar emetic was used in 2 per cent. solution, with which ½ per cent. carbolic acid was added to preserve its sterility.

CASE 1.—Private G., aged 21, 15 months' service in Salonica. Reported sick 17/2/17, complaining of pains in left side, shivering attacks, and dizziness. There was a history of a previous attack of malaria in July, 1916, and several minor attacks since. On admission his general condition was fair, his temperature normal, his pulse 60, and his spleen was not palpable. A blood film showed subtertian crescents. Treatment by tartar emetic was started on the day following his admission.

After the second febrile attack the patient was placed on treatment with quinine by mouth.

Day.	Blood examination.	Treatment.	Condition.
11	Seven crescents seen.	2 c.c. 2% T. emetic.	—
12	One crescent seen.	—	No pyrexia.
13	,,	2 c.c. 2% T. emetic.	,,
14	Seven crescents seen.	—	,,
15	A few crescents seen.	—	,,
16	B.F. negative.	—	,,
17	,,	3 c.c. 2% T. emetic.	,,
18	A few crescents seen.	—	,,
19	B.F. negative.	4 c.c. 2% T. emetic.	,,
20	,,	—	,,
21	,,	—	,,
22	A few crescents seen.	—	,,
23	B.F. negative.	—	,,
24	,,	—	,,
25	—	—	,,
26	Numerous B.T. parasites seen.	—	T. 102·4° F.
27	B.F. negative.	—	No pyrexia.
28	Very numerous B.T. parasites seen.	—	T. 99·8° F.

CASE 2.—Corporal S., aged 32, admitted to hospital on Feb. 15th, 1917. Reported sick on 3/2/17, complaining of attacks of shivering, vomiting, and pains all over. There was a history of a previous attack in July, 1916, and 10 or more slight attacks since that date, the attacks recently becoming more frequent. On admission his general condition was good, his temperature normal, pulse 90, spleen hard, tender, and palpable, one finger's breadth below the costal margin. His blood showed subtertian crescents and small ring forms.

In spite of the disappearance of the parasite from the peripheral blood stream, yet there were moderately sharp relapses, after which quinine treatment was started.

Day.	Blood examination.	Treatment.	Condition.
12	—	—	No pyrexia.
13	—	—	,,
14	Scanty ring parasites.	Quin. sulph. gr. 40.	,,
15	Subtertian crescents +; rings +.	,,	T. 100·4° F.
16	—	,,	T. 101° F.
17	—	1 c.c. 2% T. emetic.	No pyrexia.
18	One small ring parasite.	—	,,
19	B.F. negative.	2 c.c. 2% T. emetic.	,,
20	,,	—	,,
21	One crescent found.	3 c.c. 2% T. emetic.	,,
22	,,	—	,,
23	B.F. negative.	—	,,
24	Two crescents found.	—	,,
25	—	4 c.c. 2% T. emetic.	,,
26	B.F. negative.	—	,,
27	,,	—	,,
28	One small ring parasite.	—	,,
29	B.F. negative.	—	,,
30	,,	—	,,
31	,,	—	T. 103° F.
32	,,	—	T. 102·8° F.
33	,,	—	T. 101° F.
34	,,	—	No pyrexia.
35	,,	—	,,

CASE 3.—Lance-Corporal B., aged 21, 14 months in Salonica. Admitted on 18/2/17, having reported sick a week previously, complaining of shivering, headache, and temperature rising to 103° F. There was a history of a previous attack of malaria in June, 1916. On admission his general condition was fair, tongue clean, temperature normal, pulse 80, and spleen not palpable. His temperature remained normal for a week after admission and then rose to 104°. A heavy infection with B.T. parasites was present in blood.

Day.	Blood examination.	Treatment.	Condition.
8	—	—	No pyrexia.
9	—	—	,,
10	—	—	,,
11	—	—	,,
12	—	—	,,
13	—	—	,,
14	—	—	,,
15	—	—	T. 9 P.M. 104° F.
16	B.T. ++	1 c.c. 2% T. emetic.	T. 100° F.
17	B.T. + (with gametocytes).	—	T. 106° F., 105·2° F.
18	B.T. +	3 c.c. 2% T. emetic.	No pyrexia.
19	B.T. gametocytes +	4 c.c. 2% T. emetic.	,,
20	B.T. + (scanty gametocytes)	—	,,
21	B.T. + (scanty).	—	,,
22	B.F. negative.	—	,,
23	,,	—	,,
24	,,	—	,,
25	B.T. + (very scanty).	—	,,
26	B.T. + (scanty).	Quin. sulph. gr. 20 t.d.s.	T. 104·6° F.
27	,,	—	No pyrexia.
28	B.T. +++	—	T. 104·2° F. T. 103·4° F.
29	B.T. + (scanty).	—	No pyrexia.
30	,,	—	,,

In spite of tartar emetic the parasites persisted in the circulation, and a week after the last injection of 8 centigrammes of tartar emetic the patient had a typical attack of malaria with temperature rising to 104·6° F. He was placed on sulphate of quinine 20 grs. three times a day by the mouth with progressive improvement.

CASE 4.—Corporal C., aged 41, 15 months in Salonica area. The case was admitted to hospital on 17/2/17 for observation on recommendation of medical board. There was a history of a previous attack of malaria

[1] Brit. Med. Jour., Jan. 6th, 1916.

in August, 1916, which had caused him to be invalided to Malta. He returned from Malta in October to this command, and in January, 1917, was again admitted to hospital. He did a week's duty and was admitted again to hospital. On admission his general condition was poor, he was anæmic and cachectic looking, the temperature was normal, the spleen not enlarged. The day following his admission he had a typical attack of malaria, with temperature rising to 103° F., and benign tertian parasites present in the blood.

Day.	Blood examination.	Treatment.	Condition.
1	—	—	No pyrexia.
2	—	—	T. 103° F.
3	—	—	No pyrexia.
4	B.T. +	1 c.c. 2% T. emetic.	T. 101° F.
5	B.T. + (scanty).	—	No pyrexia.
6	B.F. negative.	2 c.c. 2% T. emetic.	,,
7	,,	—	,,
8	,,	—	,,
9	,,	—	,,
10	,,	—	,,
11	,,	—	,,
12	,,	—	,,
13	One B.T. parasite.	—	,,
14	—	4 c.c. 2% T. emetic.	,,
15	B.F. negative.	—	,,
16	,,	—	,,
17	,,	—	,,
18	B.F. + (scanty).	Quin. sulph., gr. 20, t.d.s.	T. 103° F.
19	B.T. negative.	—	No pyrexia.
20	,,	—	,,
21	,,	—	,,
22	,,	—	,,
23	,,	—	,,
24	,,	—	,,

Five days after the last injection of 4 c.c. of tartar emetic his temperature again rose to 103° F., and benign tertian parasites reappeared in the blood stream. He was placed on 20 grs. of quinine sulphate three times a day by mouth. The temperature remained normal, the parasites disappeared, and on the 14/3/17 he was discharged to hospital ship.

CASE 5.—Driver W., aged 21. Twelve months' service in Salonica area. He reported sick on 11/2/17, complaining of shivering attacks and pains all over. There was history of previous attacks of malaria since May, 1916. On admission he looked anæmic and ill, temperature normal, pulse 104, and spleen palpable one finger's breadth below the costal margin, but not tender. He complained of pain in the toes when the feet were warm. On the dorsal surface of all the toes on both feet were small irregular areas dark in colour, and all partially anæsthetic. Similar changes in the feet had been observed previously in three cases suffering from severe malaria, and have already been reported elsewhere.

Day.	Blood examination.	Treatment.	Condition.
12	—	—	No pyrexia.
13	B.T. +	—	T. 101° F.
14	B.F. negative.	1 c.c. 2% T. emetic.	No pyrexia.
15	,,	—	,,
16	,,	2 c.c. 2% T. emetic.	,,
17	,,	—	,,
18	,,	—	,,
19	,,	—	,,
20	,,	—	,,
21	,,	—	,,
22	,,	—	,,
23	,,	—	,,
24	,,	—	,,
25	,,	—	,,
26	,,	—	,,
27	,,	—	,,
28	,,	—	,,
29	B.T. + (scanty).	—	T. 102·4° F.
30	B.F. negative.	—	T. 104·4° F.
31	—	3 c.c. 2% T. emetic.	T. 103° F.
32	B.T. +	—	No pyrexia.
33	,,	—	,,
34	B.F. negative.	—	,,
35	B.T. + (scanty).	—	,,
36	—	Quin. sulph. gr. 20 t.d.s.	T. 104° F.
37	B.F. negative.	—	No pyrexia.
38	,,	—	,,
39	B.T. + (scanty).	—	,,

In this case the tartar emetic had no effect in causing the disappearance of the parasite or in preventing clinical relapses. The condition of the feet gradually cleared up. He was placed on quinine sulphate by mouth, and ultimately was discharged to hospital ship.

CASE 6.—Sapper B., aged 26, 15 months' service in Salonica area. Reported sick on 10/2/17, complaining of shivering attacks and headaches. Admitted to base hospital on 15/2/17. There was a history of one previous attack of malaria in August, 1916. On admission his general condition was fair, temperature normal, pulse 76, spleen not palpable. On the day after his admission he had a typical attack of malaria, with temperature of 101·4° F., and blood film showed a heavy infection with benign tertian parasites.

For some days after the last injection of 4 c.c. tartar emetic the blood film became negative, but again became positive after three sharp rises of temperature. In spite of the tartar emetic this case showed a mild degree of almost continuous pyrexia interrupted by sudden elevations of temperature, which did not yield until quinine was administered. The spleen also, which was not palpable on admission, became definitely tender and palpable during the period when tartar emetic was being administered. He was ultimately put on quinine by mouth and discharged to hospital ship.

Day.	Blood examination.	Treatment.	Condition.
3	—	—	T. 104·6° F.
4	—	—	T. 101·6° F.
5	—	—	No pyrexia.
6	—	—	,,
7	B.F. negative.	—	T. 101·4° F.
8	—	—	No pyrexia.
9	B.T. + +	—	T. 105·2° F.
10	B.F. negative.	—	T. 103·2° F.
11	,,	1 c.c. 2% T. emetic.	No pyrexia.
12	One B.T. gametocyte.	—	,,
13	—	2 c.c. 2% T. emetic.	,,
14	B.F. negative.	—	,,
15	,,	—	,,
16	,,	—	T. 100·4° F.
17	,,	—	No pyrexia.
18	,,	3 c.c. 2% T. emetic.	,,
19	,,	—	,,
20	,,	—	T. 99·8° F.
21	,,	—	T. 99·8° F.
22	,,	4 c.c. 2% T. emetic	T. 101° F.
23	,,	—	T. 100° F.
24	,,	—	No pyrexia.
25	,,	—	,,
26	,,	—	T. 103° F.
27	,,	—	T. 100·4° F.
28	B.T. present + +	—	T. 101·8° F.
29	B.F. present.	—	T. 100·6° F.
30	B.T. present (scanty).	—	T. 103·6° F.
31	,, ,,	—	No pyrexia.
32	B.T. present (very scanty).	—	,,
33	B.F. negative.	—	,,

CASE 7.—Private H., aged 24, 15 months' service in the Salonica area. Reported sick on 11/2/17, complaining of attacks of shivering, sweating, headache, cough, and fever. He was admitted to base hospital on 18/2/17. In July, 1916, patient had his first attack, and was sent to Malta for three weeks. On admission to hospital his general condition was fair, but he looked anæmic, pulse 80, temperature 99° F., and spleen definitely enlarged, hard and tender. Benign tertian parasites were found in the blood films. In spite of five injections of tartar emetic, 28 centigrammes in all, the parasite persisted in the film, and the patient had repeated bouts of fever. Ultimately he was placed on 20 grs. of quinine sulphate three times a day by mouth, with the result that the temperature became normal, his blood film negative, and remained so during the rest of his stay in hospital.

Day.	Blood examination.	Treatment.	Condition.
8	—	—	T. 102° F.
9	B.T. +	—	No pyrexia.
10	B.F. negative.	0·02 gm. T. emetic.	T. 104° F.
11	B.T. + (scanty).	—	No pyrexia.
12	,,	0·04 gm. T. emetic.	,,
13	One B.T. gametocyte present.	—	,,
14	,,	—	,,
15	B.F. negative.	0·08 gm. T. emetic.	,,
16	B.T. + (scanty).	—	,,
17	B.F. negative.	0·08 gm. T. emetic	,,
18	,,	—	,,
19	B.T. rings + (scanty).	—	,,
20	B.T. + (scanty) with gametocytes.	0·06 gr. T. emetic.	T. 103·4° F.
21	B.T. + (fair numbers).	—	No pyrexia.
22	B.T. + (very scanty).	—	,,
23	,,	—	T. 104° F.
24	,,	—	No pyrexia.
25	B.T. + (scanty).	Quin. sulph. gr. 20	T. 104·6° F.
26	B.F. negative.	—	No pyrexia.
27	,,	—	,,
28	,,	—	,,
30	,,	—	,,
31	,,	—	,,

CASE 8.—Private R., aged 21, reported sick on 15/2/17, complaining of weakness and attacks of shivering. Admitted to base hospital on 17/2/17. The primary attack of malaria had occurred in October, 1916, and from that time the patient had had attacks almost every week. On admission his general condition was poor, anæmic, temperature 105·6° F., pulse 114, his spleen hard and extending three fingers' breadth below the costal margin. His blood showed subtertian crescents and rings.

Day.	Blood examination.	Treatment.	Condition.
1	Subtertian crescents and rings.	—	T. 105° F.
2	—	Quin., 20 grs. t.d.s.	T. 99·4° F.
4	—	1 c.c. 2% T. emetic.	T. 98° F.
5	Benign tertians only.	—	No pyrexia.
6	—	2 c.c. 2% T. emetic.	,,
7	Blood negative.	—	,,

From the time of the last injection of tartar emetic the blood film remained negative till the patient's discharge from hospital. He had, however, two attacks of pyrexia, the temperature on each occasion rising to 101° F. The spleen did not diminish in size and he was ultimately discharged to hospital ship.

Of these eight cases there were two mixed infections (Nos. 1 and 8), one subtertian malaria (No. 2), and five benign tertian malaria (Nos. 3, 4, 5, 6, 7), three of which showed gametocytes.

Of the two mixed infections, the crescents disappeared in both cases, the benign tertian parasites persisting in one and disappearing in the other.

In the subtertian crescent infections the crescents disappeared after three injections of tartar emetic. In spite of the disappearance of the crescents the patient had three typical clinical attacks of malaria, though the parasites could not be demonstrated again in the peripheral blood stream.

Of the five benign tertian infections, in none did the parasites disappear from the blood stream till large doses of quinine had been administered.

In the three cases where gametocytes were seen, in two the gametocytes were not found subsequent to the tartar emetic treatment, in the other case the gametocytes persisted.

Neither in the subtertian cases, nor in the benign tertian cases, was any marked clinical improvement noted, and certainly in the benign tertian cases the tartar emetic did not appear to exert any effect whatever on the parasites.

The results coincide with those of Low and Newham reported in the *British Medical Journal* of March 3rd, 1917, and the results of cases treated in other hospitals, and were so disappointing that we did not feel justified in continuing the observation.

THE MORTALITY FROM POST-CHOLERAIC URÆMIA:

A 70 PER CENT. REDUCTION THROUGH INTRAVENOUS INJECTIONS OF SODIUM BICARBONATE.

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I HAVE already recorded a great reduction in the mortality due to post-choleraic uræmia during 1915 through the routine intravenous injections of bicarbonate of soda in all severe cases of cholera,[1] based on the proof by Captain A. J. Shorten, I.M.S., and myself,[2] that an acidosis is an essential feature of severe cholera. As these favourable results have now been confirmed by a much larger series of cases during the last three cholera seasons in Calcutta, which can be compared with the data of three years before the use of the alkaline solutions in the same wards, it appears to be advisable to place them on record.

Statistical Evidence.

As early as 1893 Wall, in his book on cholera,[3] used a very small quantity of sodium bicarbonate (0·2 per cent.) in his weak saline solution (0·4 per cent. of sodium chloride) intravenously, and in 1910 Sellards[4] recorded having found that large quantities of alkalies might be given by the mouth in cholera patients without rendering the urine alkaline and suspected an acidosis. In 1914 he recorded[5] having obtained a great reduction in the deaths from post-choleraic uræmia by the addition of sodium bicarbonate to the saline solution used for intravenous injections. In 1915 Captain Shorten and I[2] recorded actual estimations of the alkalinity of the blood in 20 cholera patients, and showed that in fatal cases of post-choleraic uræmia it is usually reduced to the extremely low figure of N 100 or even less, when it is too late, as a rule, to save the patients even by alkaline transfusions. Later in 1915[6] I recorded alkalinity estimations in 62 cases, and early in 1916[7] gave the data of 104 cases treated during the previous year, which showed a reduction of the alkalinity to from N/45 to N/60 in no less than 76·9 per cent. of cholera cases, and to the extreme and dangerous degree of N/80 to N/100, or even less, in as many as 30·7 per cent. During 1915 the death-rate from post-choleraic uræmia was reduced to 2·7 per cent. from an average of 11·1 per cent. during the previous three years without alkalies—a remarkable improvement.

The following table gives the figures for the three years 1912–14 without alkalies, and for 1915–16 and the first half of 1917, which includes the cholera season in Calcutta, during which 70 per cent. of the yearly cholera cases occur:—

Total Cholera Mortality and the Deaths from Uræmia Before and After the Use of Alkalies.

Years.	Total cases.	Deaths.	Per cent.	Uræmia deaths.	Per cent.
Without Alkalies.					
1912	170	54	31·76	24	14·11
1913	200	49	24·5	17	8·5
1914	222	49	22·01	25	11·2
1912–14	592	152	25·6	66	11·1
With Alkalies.					
1915	226	39	17·22	6	2·64
1916	204	52	25·5	8	3·92
1917	154	24	15·6	5	3·2
1915–17	584	115	19·7	19	3·25

Reduction in the mortality from uræmia by alkalies 70·7 per cent.

The extensive data in the table so amply confirm my former results in a smaller series that they require very little comment. The reduction of the uræmia death-rate during the last two and a half years by 70 per cent. affords the most striking testimony to the importance of the proof that this serious complication of cholera is essentially an acidosis, which can moreover be largely prevented by the routine use of alkalies intravenously and by the rectum. It is worthy of note that more than half the few remaining cases of fatal uræmia in the last two and a half years occurred in patients admitted with suppression of urine of from one to three days' duration, too late to benefit fully by the alkaline treatment.

Method of Treatment and its Effects.

It may be well to state again my present routine regarding saline injections in cholera.

Two solutions are now used. The first is the hypertonic saline, which I have given with much success in well over one thousand cases during the last ten years. It consists of 120 grains of sodium chloride with 4 grains of calcium chloride to a pint of sterile water. For several years now I have omitted the potassium chloride of Ringer's fluid, as some physiologists regard this as an unnecessary and possibly depressant addition, and the increasingly favourable results obtained in recent years show that it is certainly not required. The second, or alkaline solution, contains 60 grains of sodium chloride and 160 grains (2 per cent.) of sodium bicarbonate, and is thus also a hypertonic fluid. To avoid decomposition of the bicarbonate on boiling, the chloride solution is sterilised before the bicarbonate is added, and the latter sterilised in packets in an autoclave and subsequently added.

In patients admitted early without prolonged suppression of urine the hypertonic sodium chloride solution only is used at the first transfusion, the quantity being regulated by the specific gravity of the blood as described in my book on cholera. If the case is sufficiently severe to require further intravenous injections, at each subsequent transfusion one pint of the alkaline solution is first given and followed by the hypertonic chloride solution in the quantity indicated by the specific gravity of the blood. In cases admitted late with suppression of urine for 12 hours or more the alkaline solution is given at the first injection as well. Moreover, it is used in all cholera cases with deficient urinary secretion without much concentration of the blood as shown by the specific gravity, in which the normal saline was formerly advised by me. As long as the specific gravity of the blood is not much below the normal, such as not less than 1050, a pint of the alkaline solution can always be safely given intravenously for deficient secretion of urine. In addition, this solution is now used in the place of normal saline by the bowel when formerly advised.

In a former paper[1] I gave details of several cases in which from 800 to 1120 grains of sodium bicarbonate had been injected intravenously in threatening uræmia in cholera, with recovery. The following remarkable case is also worthy of record.

Post-choleraic suppression of urine for six days, with re-establishment of the secretion after 1600 grains of sodium bicarbonate had been injected intravenously.—A man, aged 53, admitted for cholera of 29½ hours' duration, with suppression of urine

for 24 hours. Sp. gr. of blood 1055, blood pressure 50 mm. He was given 1 pint of the alkaline solution and 3½ pints of hypertonic chloride solution on admission, and in the course of six days received a total of 14½ pints, of which 10 pints were the alkaline solution, containing in all 1600 grains of sodium bicarbonate, in eight intravenous injections. During one day before admission and five complete days in hospital he passed no urine, but on the sixth day in hospital 9 ounces were measured, followed by 20 ounces the next day, and then freely for three more days, during which the uræmic symptoms entirely disappeared. Unfortunately, he developed a septic arm after a hypodermic injection of pituitrin, the temperature rose to 102° F., and he succumbed to fever and exhaustion five days after the urinary flow had been re-established, his age being much against him.

I have been through my tabulated records of nearly 600 cases treated without alkalies from 1912–14, and find that no case of recovery occurred in which the urine had been completely suppressed for more than two days, while very few even of the fatal cases survived more than three days without passing urine. On the other hand, during the last two and a half years, under the alkaline treatment, it has been by no means rare for patients to be saved after complete suppression of urine for three days and over, but the above case of free secretion of urine after six days' complete absence is a record in my long experience of post-choleraic uræmia, which I have previously pointed out,[7] runs a much more rapid course than surgical forms of anuria without acidosis. It is of interest to note that shortly before the urine reappeared the alkalinity was found to have been raised to the high point of N/28 5.

Lastly, I may point out that the considerable further reduction in the mortality of cholera in my wards during the last two and a half years is mainly due to the decrease of deaths from uræmia as a result of the alkaline treatment as shown in the table. In 1916 an exceptionally large number of deaths occurred from collapse (namely, 19 per cent. against an average for the last 5½ years of 11 per cent.). This was mainly due to an unusually large number of admissions in a moribund state, the patients dying before transfusion could be completed, and of very old and feeble subjects. Nevertheless, the mortality during the last two and a half years among 584 cases has fallen to 19·7 per cent., or one-third of the rate in the same hospital before I commenced the hypertonic saline treatment, while during the first six months of the present year (in which the mortality is almost invariably higher than in the second half) the death-rate among 154 cases has been only 15·6 per cent., or one-fourth of the old mortality, a highly gratifying reduction of about 75 per cent. in the death-rate of this terrible disease.

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EPITHELIOMATOUS NEOPLASMS OF THE DORSAL ASPECT OF THE HAND.

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THE origin of epitheliomata, like that of all malignant growths, is obscure, but these neoplasms, developing on the dorsal aspect of the hand, are usually preceded or accompanied by some local irritative process. These processes are trauma, the various dermatoses, osseous fistulæ, angiomata, papillomata, and cicatrices.

The Part Played by Local Irritative Processes.

Traumatism *per se* appears to favour epithelial neoformation, and in the case of the hand contused wounds are, in the patient's history and opinion, the origin of the lesion. The origin of the so-called professional epitheliomata, so common on the dorsal aspect of the hand, may be explained in this way, since burns of an accidental nature or from acids and caustics employed in certain professional occupations are frequent.

The dermatoses are often the starting point of epithelial lesions, particularly chronic eczema, psoriasis, and, above all, lupus. Ulcers have been recorded as the causative factor of these growths, and I believe that this is particularly true in the case of cutaneous cancroids.

Diseases of the bones of the hand may give rise to epithelioma of the skin on account of the continued irritation to which they give rise, but fistula developing in a bone is particularly prone ultimately to set up an epitheliomatous process, and a fair number of instances are known of pavement-cell epithelioma occurring in fistulous tracts of long standing.

Angiomata are well known for their tendency to cancerous change, although this is denied by some. Perhaps papillomata are the most constant process in the etiology of epitheliomatous growths on the dorsal aspect of the hand. At the start these epithelial productions are generally benign, but from repeated trauma or ill-advised treatment with caustics and the like, they assume malignant characters. All of these processes, no matter what may be their origin, may undergo such malignant transformation, and as they are frequently seated on the dorsal aspect of the hand their etiological importance is clear.

There are, however, epitheliomata whose origin is quite different which develop in tissues apparently healthy. Unquestionably all the causes that have been mentioned play a part in the origin of the malignant process, but this part is secondary only, and in all probability they merely awaken or accelerate the activity of certain pathologic productions which likewise develop from some inflammatory influence that is as yet an unknown quantity. These local causes in the development of epithelioma are neither absolute nor necessary, since this malignant growth can and does develop without them.

Nature and Development of the Neoplasm.

Epithelioma of the dorsal aspect of the hand appears to be a lesion of advanced years, the greater number of patients being from 60 to 70 years of age; but when the malignant tumour arises in a nævus this occurs more frequently between the ages of 30 and 40 years. This malignant process is said to be more common in the male, and undoubtedly this is true for the lips, cheeks, &c., but both cases to be here reported occurred in women. It has also been shown by Heurteaux that of all the cutaneous epitheliomata of the upper limb the dorsal aspect of the hand is the seat of the process in somewhat over 50 per cent. of the cases.

Epithelioma of the back of the hand commences usually by hypertrophy of a papilla, a tumefaction of the derma, or may be seated in a sudoriparous gland, and, according to the type, there will result a papillary or glandular dermic form, but it seems more than probable that the former is more frequent in the anatomical region considered in this paper.

The growth commences by a small verrucous production of hard consistency, its base being composed of a cluster of hypertrophied cutaneous papillæ. Then the verruca increases in size and at the same time becomes more vascular. It is apt to give rise to intense pruritus and excoriates and cracks. These crevices, by multiplication, at length result in an ulcerous process, giving rise to a serous secretion in which epithelial cells and pus cells are found. The epithelium next pushes its way between the papillæ and involves the dermis, which becomes the seat of a very marked cell proliferation. In the deeper structures the connective tissue becomes mixed with the epithelial cells and represents the area of invasion and of infiltration of the neighbouring structures.

As soon as the healthy tissue becomes involved and the epithelial productions penetrate the surrounding structures an inflammatory process of the integuments will be observed. The zone of invasion alone separates the neoplastic production from the healthy tissues, and from this time on the epithelial ulceration progresses in depth and extent.

In other cases the neoplasia forms masses which mingle with the connective tissue which it invades; its growth is dependent upon the surrounding structures; the muscles are invaded, their fasciculi being separated by epithelial growth. A number of epidermic globes are also present.

A process such as this is that of a neoplasm which is dry and whitish in hue and gives no juice when it is scraped; in other words, it is the lobulated pavement-cell epithelioma. Finally, the growth may be composed of long tubuli, resulting from the development in the gland tubules. This type is less common, and represents the tubulated pavement-cell epithelioma. The third and last type of the process

encountered on the back of the hand is the pearly pavement-cell epithelioma. It is the most uncommon of them, and represents those growths which clinically remain stationary for a considerable lapse of time. Horny, concentric cells are only found, their power of invasion is slight, and if no irritative process comes in play they remain quiescent.

Microscopical examination of the raised edge of one of these growths shows a tissue having the general appearance of a gland—that is to say, an irregular division into large lobes, these divided in turn into lobules. The skin surrounding the tumour shows no morbid change in the dermis or horny layer of the epidermis. The Malpighian bodies offer a marked extension, while the interpapillary depressions are strongly evident. They dip down into the papillary tissue of the dermis, some of them becoming bifurcate and club-shaped, in every way similar to glandular culs-de-sac undergoing development.

From examination of numerous sections it would seem that neither the sebaceous nor sudoriparous glands nor the hair follicles are the starting point of these epithelial formations, so that it seems clear that they are derived solely from the prolongations of the Malpighian layer which exist normally between the papillary projections of the dermis. Near the growth, some of these prolongations are enlarged at their deep extremity which only reaches the middle portion of the dermis, while others dip down into the midst of the dermis, reaching its connective tissue by extending beyond the papillary layer. They are also club-shaped and are composed of a pedicle attaching them to the Malpighian body and by a deep-seated intradermic portion which is markedly spherical at its extremity.

As to the tumour itself it offers the following structure. The lobules of the neoformed tissue are arranged in clusters or in chaplets, while in the centre of the large lobules epidermic lobules are seen formed in concentric layers, like the structure of an onion. Between these lobules the connective tissue forms a network in the form of ramifications, rich in vascular supply that accompanies the young cell elements.

Therefore, it may be logically assumed that anatomically the origin of the epithelial growth is entirely limited to the interpapillary portions of the Malpighian body. The hair follicles and the sebaceous and sudoriparous glands take no part in the structure of the growth, and when they do exist in the preparation they are simply somewhat deformed from pressure of the growth. The retrogression of the neoplastic elements is due to an inflammatory process in the dermis from which the development of connective tissue results, and this connective tissue strangles the lobules of the tumour, thus bringing about resorption.

Illustrative Cases.

CASE 1.—Female, Irish nationality, 72 years of age and by occupation a charwoman. Widow for 15 years, two living children in good health. She herself has always been well and robust. Examination of thoracic and abdominal viscera negative.

About six years ago patient first noticed a small lump the size of a pea situated about the centre of the dorsal surface of the left hand. There was some pruritus (probably due to an eczematous condition of the skin) which caused her to scratch the part frequently. After a time the small lump took on the aspect of a wart which bled very easily but was not painful, and this continued to develop slowly until the condition to be described was reached.

The lesion on the back of the hand was almost exactly the size of a one-dollar piece. It was almost perfectly circular. The edges were hard and everted and raised to the extent of about 1·5 cm. The central ulcerated surface was covered with a dark-red granulation tissue which bled readily. There was a rather profuse, stinking, sanious discharge. The epitrochlear lymph node was very much enlarged and hard. Now lymphatics could be felt in the axilla, which could easily be felt, because the patient was very thin. There was no evidence of any cachexia, but pain was so intense that it kept the patient from sleeping.

Circular amputation at the lower third of the arm was done, the patient making a rapid and uneventful recovery. Her niece informed the writer that the patient lived comfortably for about four years and died from some pulmonary affection. I assume, however, from the tale told by the niece, that death was presumably due to pulmonary or pleural metastases.[1]

CASE 2.—Female, 64 years of age, a Belgian housewife, seen in consultation with Dr. Lenoir. Hereditary and personal antecedents *nil*. Heart and lungs normal excepting a slight chronic bronchitis and emphysema of the apices. Abdominal viscera negative.

Local condition.—An exuberant growth on the dorsal aspect of the right hand seated in almost the centre. This process began by a small papule of dark-red colour about seven months before I saw the patient. For no reason apparently the tumour slowly increased in size until it reached the dimensions of a 50-cent piece. The central portion, which covered the indurated base of the ulcer, had a fungous look, reddish-yellow in colour, and bled easily. At first sight the ulcer might almost be suspected of being tuberculous in nature. The contours of the base were almost perfectly circular, the edges were somewhat raised and red and surrounded by a dark violet ring. There was no difficulty in the movements of the fingers, and only a little sharp pain from time to time in the ulcer.

The axillary and epitrochlear lymph nodes were enlarged and hard and rolled under the finger. That in the epitrochlear region was the size of an almond. No evidence of cachexia.

Circular amputation of the arm at lower third, cleaning out of axilla as in operation for cancer of the breast. Recovery uneventful. At the time of writing, May 12th, 1917, the patient is still in excellent health 17 months after the operation. Histological examination showed that the growth was a tubular pavement-cell epithelioma. The lymph nodes of the axilla and epitrochlear region offered the same type of morbid change.

Clinical Phases: The Pre-ulcerative Stage.

For practical purposes epitheliomata of the dorsal aspect of the hand can be considered in two clinical phases—namely, the pre-ulcerative stage and the stage of ulceration, although it must be understood that this division is schematical. Some of these growths remain as simple subepithelial tumours for years, while others, on the contrary, develop very rapidly. The two cases reported serve as excellent types of the two extremes.

The physical signs of the pre ulcerative stage are those of a small tumour seated on the dorsal aspect of the hand, frequently over the metacarpal joints or in the ungual fold. The growth is more like an induration of the integuments than a tumour in the true sense of the word, the limits being difficult to define at the commencement of the morbid process. The induration may be flat or offer a projecting surface, and presents the important characteristic that it is intimately incorporated in the skin. If an endeavour is made to mobilise the integuments covering it, it at once becomes evident that the process is united with the deep layers of the epidermis.

Delbet maintains that one of the physical signs is the impossibility to outline distinctly the limits of the growth, the examiner being unable to detect where it commences or ends.

During the pre-ulcerative stage the skin is not perfectly normal, and has a dried, parchment, or orange-skin look, the indication of adhesion of the Malpighian elements.

The neoplasm often begins by a kind of cluster of hypertrophied papillæ resting on a common base and contained in an epidermic sheath. The process is composed by big granulations the size of a millet-seed; in colour it is greyish or rosy, and in its neighbourhood lines of a bright tint are seen, caused by dilated capillaries. At other times the process commences in the form of a rosy or greyish tubercle of very small dimensions projecting above the surrounding cutaneous surface, sessile, with an uneven, lobulated surface.

Less frequently, when the growth starts in a sudoriparous gland, the lesion presents from the start a surface limited by an undulated, sinuous, greyish-coloured rim of tissue.

The functional symptoms of the pre-ulcerative stage are not of much account. There is some pruritus if an old cicatrix or a wart is present, and scratching will hasten the development of ulceration. Pain is absent and functional disturbances likewise, unless the growth is seated over one of the finger-joints, but by far the most important of the signs is the involvement of the lymphatic system. It is a mistaken idea to suppose that this does not take place until after ulceration has occurred, because in the rapidly developing types of this morbid process the enlargement of the lymph nodes occurs early, and is for this reason an important element in the diagnosis.

The Ulcerative Stage.

The ulcerative stage must fatally arrive, and is merely a question of time. It occurs earlier in some growths than in others, particularly in the fissured and cauliflower types. The former type is common, and offers itself in the form of a crevice with clean-cut edges, without any tendency towards cicatrisation. Spreading of the borders is quite limited, but induration is marked. The edges often puff up, their external aspect becomes shiny, and the skin covering them becomes thin.

The edges shade off into the surrounding structures, while the induration cannot be limited by palpation. Small neoplastic nodules, disseminated over the edges, may be seen in the form of little grain-like bodies. The secretion is usually small in amount, being a blood-stained, cloudy fluid.

[1] *Note.*—A very excellent water-colour taken before operation of this neoplasm is in the possession of the Boston Medical Library, Boston, Mass., among a small collection of drawings presented to it by the writer some years ago.

This fissure type of the process is slow in evolution, but may be quite painful.

Quite different is the so-called cauliflower type of the process. The bottom of the ulcer is irregular, tomentous, and covered with indurated granulations which bleed upon the slightest provocation. In the sulci separating the granulations a magma becomes deposited, composed of coagulated blood, purulent serosity, and dirt. The magma is brownish in colour, contrasting with the red tint of the granulation.

When the ulcer has attained this stage it may at a given time present a tendency to excavate, the elements composing the bottom being progressively eliminated. The edges remain raised, forming a funnel-shaped process, surrounding a crater whose surface is not smooth.

The edges of this cauliflower type require a special description. They are thick, indurated like the remainder of the tumour surface. Their surface need not of necessity be ulcerated; the limits of the epidermis are irregular and at some spots the ulcer sends off a rather long expansion towards the periphery.

The borders may be sharp-cut on their outer aspect and are abruptly raised. They frequently overlap the surface of the ulcer, forming a rather deep, circular sulcus around it. The surrounding structures continue directly with the neoplasm and contain either indurated tracts, indicating extension of the growth, or isolated nodules whose neoplastic nature leaves no doubt.

The third form of epithelioma of the dorsal aspect of the hand is the ulcerating type. In this type the growth is not raised or only very slightly so, and this applies to the thickened edges. On the other hand, the bottom is hollowed out, the process develops in depth, and soon becomes adherent to the underlying structures.

The Course of the Lesion.

In all types of epithelioma of the dorsum of the hand the secretions are not usually very excessive, but that they can be so is amply demonstrated in Case 1. They are composed of a thick, brownish, sanious liquid, which easily coagulates on the ulcerated surface, forming a crust. If a trauma intervenes this crust falls, and a hæmorrhage, which may be severe, results. The cauliflower type is the one in which loss of blood is more frequent, as the granulations form large buds, while if the hæmorrhages recur often an extreme degree of anæmia results whose nefarious effect becomes coupled with that of the cachexia.

When the ulcerative process has developed pain of very intense character occurs and may be the principal indication for operation, as was the case of the patient in Case 1. It is, of course, due to the involvement of the nervous branches invaded by the neoplasm, and when the trunks of the radial or ulnar nerves are attacked by the malignant process the suffering is intense.

When the disease has extended sufficiently the movements are interfered with on account of the involvement of the tendons and bones.

The regional invasion of epithelioma of the dorsum of the hand includes the bones, tendons, nerves, and vessels. The epitrochlear lymph node may be metastatically involved early in the process, while involvement of the lymphatics of the axilla is almost always constant, at least when the affection is far advanced. When they have formed a mass in the axilla they press upon the vasculo-nervous elements, resulting in œdema of the upper limb and severe neuralgia. General visceral metastases have been noted.

Prognosis and Treatment.

Epithelioma of the back of the hand is a serious affair, but the gravity of the case varies with the type of the evolution of the neoplasm. When this is slow it may exist for several ye rs without giving rise to any marked disturbance. The cauliflower type offers the most rapid progress.

There is one point to which attention is directed, to wit: in cases arising in subjects of advanced years the senile crust, even when ulceration has taken place, may remain stationary for years without local extension of the process or involvement of the lymphatic system, and in these circumstances the patient attributes little importance to his trouble. Then suddenly, following a trauma or the ridiculous habit, both by the laity and only too often by the physician, of applying some form of caustic, the growth assumes a very rapid development, and this is also most marked in the lymphatics, so that cases which were localised become quickly inoperable and give vent to severe or almost fatal hæmorrhage.

The prognosis, therefore, is difficult to give in any degree of precision on account of the above-mentioned circumstances, but it may be said that local removal of the growth is almost sure to be followed by a recurrence which undergoes an even more rapid evolution than the primary neoplasm.

As to treatment I have little to say, as I am of opinion that when the epitrochlear lymph node is involved nothing less than amputation at the lower third of the arm with a free removal of the axillary lymph nodes and fat, even when the former cannot be detected by palpation, is the only interference worthy of consideration, providing the cachexia is not too far advanced and that the general condition of the subject fulfils the ordinary requirements demanded for a successful operation.

Radiotherapy, radiumtherapy, and fulguration in no way appeal to me from the viewpoint of sane surgical principles, but I must admit that I have had no personal experience with them in the pathologic process under consideration. If the process is an absolutely local one at the time the case first comes under observation, one of these methods might be tried on condition that time be not lost if a manifest improvement does not take place very soon after the treatment is begun.

Geneva, Switzerland.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

CASE OF TWIN PREGNANCY WITH ONE MACERATED FŒTUS.

Under the Care of

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(From the Maternity Department of the Leeds General Infirmary. Case reported by PAT. A. H. EGERTON, *Maternity Clerk.)*

Mrs. A., aged 28, mother of three children, summoned the maternity clerk on the evening of July 30th, 1917. She was first seen at 9.10 P.M., and was found standing in her room talking to some other women. She stated that she expected labour to take place in about six weeks. During the day (about midday), when washing some clothes, she had slipped and fallen backwards, giving herself what she called a "wrench." This was followed by an attack of abdominal pain, described as "dragging" and coming on in spasms. It was accompanied by a slight hæmorrhage. She did not consider herself to be experiencing true labour pains, but said the sensations were somewhat similar. At 8 o'clock the same evening she went to bed and shortly afterwards passed a partly macerated fœtus. It measured 7½ inches, and the skin was yellow, shrivelled, and waxy-looking. The placenta had not come away, and a small shrivelled cord was hanging from the vagina. The abdomen was next examined, and by palpation the uterus was found to be on a level with the umbilicus. On auscultation a fœtal heart was heard, thus proving the presence of another child. On vaginal examination little or nothing abnormal could be made out.

The patient attended at the infirmary next day, bringing the macerated fœtus with her. She had had no pain since the day before. Professor Hellier forthwith made a vaginal examination, and informed her that the head of the second fœtus was presenting. She was advised to stay in the infirmary until the labour was over, but declined as she could not leave her other children, and went home in a cab. She was attended the same afternoon by the maternity clerk, who delivered her naturally of a living, premature, female child at 3.25; length about 15 in., weight not ascertained. The child was cyanosed and was very feeble. The placenta followed in 20 minutes. There was no post-partum hæmorrhage. The placenta was normal and had two separate cords. The one to which the living fœtus was attached was of normal size and consistence. The other was shrivelled and atrophic. To this cord the dead fœtus had been attached.

The second child survived for only one week. It was from the first not expected to live very long, and never recovered

from its cyanosed condition. The mother developed a slight congestion of the lungs, probably due to pneumonia, but under treatment this disappeared, and when last seen, on August 8th, she was quite well.

The interesting point in this case is that it demonstrates that, in a twin pregnancy, one fœtus may die, whilst the other continues to develop normally; also that the uterus may carry the dead fœtus to a much later period of the pregnancy. In this case the onset of labour was determined by the accident. Nineteen hours separated the birth of the living from that of the dead fœtus.

A CASE OF CONGENITAL ANGIOMA OF THE TONGUE.

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THE following case is of interest in that, I believe, it is uncommon, and because of the apparent local inconvenience the growth has caused resulting in a chronic dyspeptic condition.

The patient is 26 years of age. At birth a small swelling on the dorsum of the tongue of about the size of a pea was noticed and diagnosed by the medical man in attendance as a "birthmark." No pain has ever been caused by it, and there has been no ulceration or hæmorrhage from the growth. At the age of 16 years the tumour had become as large as a marble, causing difficulty with mastication and consequent indigestion. A chronic condition of indigestion from that date necessitated the patient giving up training for his profession. He was advised to undergo a course of careful dieting and attention to his bowels. This treatment had excellent results as long as it was carefully carried out; but neglect of feeding at regular times, with careful attention to the food, brought a return of the trouble.

Three weeks after joining the Army the patient was sent into a hospital with symptoms suggesting appendicitis, but recovered with careful feeding. Indigestion has become gradually worse, with constant attacks of constipation. He is unable to digest ordinary food owing to difficulty of mastication. There is no history or evidence of syphilis.

The present condition of the growth is as follows:—A reddish-blue growth, the size of a large marble, situated on the dorsum of the tongue, well defined with raised edges, and smooth to the touch. On pressure the growth can be reduced in size, but immediately fills up again when the pressure is removed. Tongue is always furred and unhealthy, the portion around the growth feels indurated. Small "shotty" glands can be felt at the angle of the jaw on both sides. The patient has a sallow, unhealthy appearance, and has lost weight considerably during the last year.

It has been thought inadvisable to remove the growth, as it is a cavernous type of angioma and would possibly be very difficult to remove without seriously impeding the use of the tongue owing to the fact that a large portion of the organ would have to be removed; and bearing in mind that it is a benign growth and that with care and attention to diet very little discomfort may be caused, the general opinion has been that it is better to treat the patient from a medical rather than surgical point of view.

NATIONAL HEALTH SOCIETY.—The Lady Priestley Memorial Lecture on The Child and the Home will be given by Sir Arthur Newsholme on Wednesday, Nov. 21st, at 3 P.M., in the Robert Barnes Hall, 1, Wimpole-street, London, W. 1.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

The Value and Limitations of Sanatorium Treatment.

A MEETING of this society was held on Nov. 12th, Sir STCLAIR THOMSON, the President, being in the chair, when the first stage was conducted of an interesting and valuable debate on the Value and Limitations of Sanatorium Treatment. The debate was introduced generally by Dr. T. D. LISTER, physician to the Mount Vernon Hospital for Consumption, and his address is published in full in THE LANCET this week. The subject was then taken up under the three headings of the Well-to-do (Dr. DAVID LAWSON), the Middle Classes (Dr. NOEL BARDSWELL), and the Working Classes (Dr. W. O. MEEK).

The Value and Limitations of Sanatorium Treatment for Tuberculosis as Regards the Well-to-do.

Dr. LAWSON said: Unlike his less-favoured brother, the well-to-do patient seeks medical advice on slender provocation, and in this way tuberculous disease is often accidentally detected in its early phase and the patient placed under sanatorium treatment while the chances of recovery are still good. Duration of treatment is one of the vital elements of success, and its possibility confers great relative advantage upon the well-to-do patient. His mind is freed from financial cares throughout his term of treatment. For these reasons it is not unfair to expect more favourable results from the sanatorium treatment of patients drawn from the better-off classes. The term "sanatorium treatment of phthisis" should be defined in a wide sense to include all the resources of modern medicine, as well as those of its sister professions. Skilled nursing is no longer the luxury of the rich, but a routine measure available to the humblest inmate of a pauper sanatorium. The pathologist, radiologist, laryngologist, dermatologist, neurologist, and general surgeon are all pressed into the service of the sanatorium physician. Sanatorium treatment as now understood and administered secures for the patient under specially climatic surroundings and under conditions specially favourable for detailed supervision all the resources of modern medicine. Dr. Lawson then submitted the results of his own experience in 1000 sanatorium cases, dealing with their condition as they were on the point of leaving the sanatorium.

The classification adopted was based upon the consideration (see Table I.) that a patient on completion of his treatment in the sanatorium might be definitely worse than

TABLE I.—*Analysis of 1000 Cases of Pulmonary Tuberculosis Treated under Sanatorium Conditions.*

Depreciated	Improving	Appreciated
204 = 20·4 p.c.	265 = 26·5 p.c.	531 = 53·1 p.c.
Worse: 141 = 14·1 p.c.	Died: 63 = 6·3 p.c.	Arrest: 170 = 17 p.c.	Complete recovery: 361 = 36·1 p.c.

when he began treatment, in which case he was placed under the category of those whose state had *depreciated*. If his condition had so much improved that full working capacity had been restored his name appeared under those whose condition had *appreciated*. Between those two classes existed a large number of patients whose condition was undoubtedly improving, but the permanent trend of whose disease could not yet be definitely predicted when lost touch with. When evidence of acute disease tending to subside was still present they were included under the heading of *improving*. A certain number whose condition showed no definite alteration for better or worse were included under the heading of those whose condition was believed to be worse. Under *complete recovery* were included patients whose expectoration had disappeared or, if present, contained no tubercle bacilli, and in whose chests evidence of moisture could no longer be detected, who no longer presented constitutional evidence of tuberculous disease, and whose general health was excellent. Compensatory emphysema was well marked in these cases. By *arrest* was meant a similar condition with two points of difference: (1) The arrested case might still have a little expectoration from time to time, usually in the morning, containing tubercle bacilli; and (2) a little moisture in the lung might still be recognisable. In some of

these patients fine râles at the extreme apex or sternal free border remain throughout life a permanent legacy of the disease. Of the 531 cases which became perfectly well there were 54·2 per cent. in which no tubercle bacilli were found, as against 45·8 per cent. in which they were recognised (see Table II.). It might be asked: (1) What was the bearing

TABLE II.—*Analysis of the Cases whose Condition Appreciated under Treatment in Relation to the Number of Lobes involved.*

Appreciated 531 cases

1 lobed	2 lobed	3 lobes or more
301	189	41
56·6 p.c.	35·6 p.c.	7·8 p.c.

Closed Cases—288 = 54·2 p.c.
Open Cases—243 = 45·8 p.c.

of a parental history of pulmonary tuberculosis on the results of treatment? In 112 instances one parent had suffered from pulmonary tuberculosis, in 10 instances both parents. Of cases with a negative family history 21 per cent. had depreciated and 51·2 appreciated, compared with 15·2 per cent. and 66 per cent. respectively for cases with a positive history. The result of treatment, therefore, had proved more favourable in the case of patients carrying a hereditary burden. (2) To what extent might the patient's own clinical history of certain maladies tend to limit or affect the result of treatment? (*a*) Syphilis. In 8 instances a history of specific disease was admitted. Of these the condition on discharge of 1 was worse, 2 died, and the remaining 5 did well, 1 securing arrest of the disease and 4 making complete recovery. (*b*) Malaria. Malaria occurred in 33 cases (see Table III.), of whom 8 depreciated, 9 occupied an intermediate

TABLE III.—*Malaria.* 33 cases.

Depreciated	Improving	Appreciated
8 = 24·2 p.c.	9 = 27·2 p.c.	16 = 48·5 p.c.

Worse	Died	Arrest	Complete recovery
7 = 21·3 p.c.	1 = 2·9 p.c.	7 = 21·3 p.c.	9 = 27·2 p.c.

position and improved, and of the remaining 16, all of whom did well, 9 made complete recoveries and in 7 the disease became arrested. (*c*) Appendectomy (see Table IV.). Fifty-seven patients, or over 5 per cent. of the total had their

TABLE IV.—*Appendectomies.* 51 cases.

Depreciated	Improving	Appreciated
11 = 21·6 p.c.	6 = 11·8 p.c.	34 = 66·6 p.c.

Worse	Died	Arrest	Complete recovery
8 = 15·7 p.c.	3 = 5·9 p.c.	9 = 17·6 p.c.	25 = 49 p.c.

appendix removed. (*d*) Pleurisy occurred as an antecedent in 114 cases and in a large majority had been present at the base upon the same side as the subsequent apical disease. (3) To what extent did certain complications limit the effect of treatment? (*a*) Glycosuria. Five cases had been met, of which 1 died, 1 made a complete recovery, and 3 appeared to be improving. (*b*) Ischio-rectal abscess had not proved common. In 1913 an analysis of 365 cases of pulmonary tuberculosis showed this complication in 15 per cent., but in the present series

TABLE V.—*Laryngeal Phthisis.* 47 cases.

Depreciated	Improving	Appreciated
22 = 48·8 p.c.	12 = 25·5 p.c.	13 = 27·6 p.c.

Worse	Died	Arrest	Complete recovery
12 = 25·5 p.c.	10 = 23·3 p.c.	7 = 14·8 p.c.	6 = 12·8 p.c.

the percentage had fallen to 2·3 per cent. (*c*) Meningitis occurred in only 4 cases, all of which proved rapidly fatal. (*d*) Laryngeal disease was present in 47, or 4·7 per cent. Of these 12 were distinctly worse on discharge and

TABLE VI.—*Senile Phthisis (occurring after 50 years of age).* 57 cases.

Sex Incidence—Male—49 Female—8
Age ,, —Under 60 years—47 60 years and over—10

Depreciated	Improving	Appreciated
22 = 38·6 p.c.	17 = 29·8 p.c.	18 = 31·6 p.c.

Worse	Died	Arrest	Complete recovery
15 = 26·3 p.c.	7 = 12·3 p.c.	7 = 12·3 p.c.	11 = 19·3 p.c.

10 died in the sanatorium. Twelve showed signs of improvement and the remaining 13 did distinctly well, in 7 cases the disease becoming arrested and in the remaining 6 complete recovery taking place (see Table V.). Of senile phthisis of 57 cases—i.e., those in which the disease appeared at 50 years of age or over (8 women and 49 men)—39 per cent. did badly under sanatorium treatment (see Table VI.). Pulmonary tuberculosis occurring in later life was both more common and more serious than many had thought. After dealing at length with the subjects of dieting and exercise in sanatorium treatment Dr. Lawson concluded by emphasising the value of artificial pneumothorax as a means of stopping dangerous hæmorrhage and in bringing about arrest in localised acute disease.

The Value and Limitations of Sanatorium Treatment for the Middle Classes.

Dr. BARDSWELL said: In virtue of the post I held at Midhurst for over 11 years I am in a position to approach the question of the value of sanatorium treatment for the middle classes with some confidence. From the first, the after-history records of all patients discharged from the sanatorium have been most carefully kept, so that the value of the work of the institution, as judged by statistics, can be determined without much difficulty. The sanatorium admits exclusively patients belonging to the more educated classes whose means are limited—clerks, school teachers, shop assistants, commercial travellers, civil servants, and members of the various professions; domestic servants and the working classes not being eligible. The average length of treatment in the sanatorium is from four to five months. The statistics I furnish, therefore, represent what some four months' treatment in a sanatorium can effect for consumptive patients belonging to the social classes indicated.

It is known to most of us that our medical statistics do not commend themselves to statisticians and actuaries; they hold that the methods we adopt are crude and inaccurate. With respect to mortality statistics after sanatorium treatment, they are agreed that the only reliable method is to compare the number of deaths that have occurred over a term of years following discharge, among patients of various ages, with the number of deaths which would have occurred had these same patients been members of the general population. The mortality rate of the general population at all ages has been determined and furnishes the means of comparison. By applying it we learn how far any individual consumptive or group of consumptives have failed to realise the life which is expected by the general population of the same age. Mortality rate can then be expressed in terms of the relation of the number of deaths which occurred, termed the "actual deaths," to the standard number of deaths, termed the "expected deaths." The mortality experience of any number of institutions may be compared with this same standard, and the results obtained compared one with the other without fear of fallacy. Thanks to the courtesy of Mr. F. B. Wyatt, F.I.A., I am able to show you some of the Midhurst results worked out on these lines. I gave Mr. Wyatt the after-history returns of 384 patients observed over a period of six years since their discharge. This number was made up of 101 cases classed in Group I. and 283 cases in Group II. All the cases had tubercle bacilli in the sputum when admitted to the sanatorium. I excluded contemporary cases in which the bacilli were not demonstrated, so that there should be no doubt that the cases dealt with were suffering from pulmonary tuberculosis.

Experience of 384 Cases Observed over Six Years.

Turban-Gerhardt group.	Actual deaths.	Expected deaths.	Ratio.
Group I. (101 cases)	17	2·610	6·5
Group II. (283 cases)	118	5·640	20·9
Total (384 cases)	135	8·250	16·4

This record shows that during a period of six years following discharge from the sanatorium the number of deaths that occurred among the Group I. cases was over six times, and among the Group II. cases over 20 times that of the expected deaths. Taking the experience of all the 384 cases, the actual deaths during the period of observation were more than 16 times as many as the expected number. When observations are extended over a longer period of years, the disparity between actual and expected deaths becomes less marked. This is what one would expect. During the first few years after discharge the worst cases succumb and the death-rate is heavy; subsequently, with the survival of the more favourable, the comparative mortality is lessened. It

may be contended that the number of cases now dealt with is too small to allow of conclusions being drawn from the figures. This is true; at the same time I should say that a complete review of the Midhurst results now in progress is giving confirmatory results. A similar study of the after-histories of 1449 cases treated at the Adirondack Sanatorium, U.S.A., published by Lawrason Brown and Pope, shows that the Adirondack experience has been almost identical with that at Midhurst.

Although few of us, probably, are accustomed to consider mortality from any disease in terms of actual and expected deaths, or have a mental standard by which to judge the significance of statistics presented in this fashion, yet the mortality experience I now show you is evidence of the loss of life which occurs among the more favourable cases despite the benefit conferred by treatment in a sanatorium. Unfortunately, there are no means of determining the mortality experienced by comparable cases treated upon other lines. Personally I feel sure it would be a heavier one. Reviewing carefully the after-history records year by year of the Midhurst patients, I am impressed by the supreme importance of after-care, using the term in its widest sense. Among those who have done well, a large proportion have been enabled to continue their treatment for some months after leaving the sanatorium. Change of occupation has not been a large factor except among young men not yet committed to any calling, and it is this class which furnishes many instances of successful emigration. The nature of the employment followed has a great bearing upon prognosis. Clergy of all denominations and members of our own profession show the highest proportion of permanent recoveries, due largely to the fact that both can exchange unfavourable for favourable conditions of work without any material loss of income. Many clerks have safeguarded their future by becoming commercial travellers or finding employment in country towns; a great many school teachers, shop assistants, and civil servants also, have removed from urban to rural areas with encouraging results. Among the many who were unable to make any such change, a shortening of the hours of work or a long week-end for some months after discharge has proved of much value. While treatment in a sanatorium is all-important for the hopeful case as a means of education and obtaining a good start on the road to recovery, the critical time begins when the sanatorium is left. Success or failure is determined during the next two or three years. It is the patient himself and the general practitioner who then shoulder the responsibility. Happily, the after-history records at Midhurst are a clear evidence that it is not lost, for they represent a gratifying measure of permanent success. It need scarcely be added that, in my judgment, sanatorium treatment for the middle classes is of great value. Admittedly, my opinion is a biassed one, but I have discussed this question with Sir Hermann Weber, Sir Clifford Allbutt, and Sir R. Douglas Powell, to mention a few only who are best qualified to express an opinion, and their reply is unanimous in confirmation.

Dr. BARDSWELL added: I accept Dr. Lister's invitation to make a few comments on his address. I agree with him that the good that a patient derives in a sanatorium depends enormously upon the capacity and character of its medical superintendent. I have purposely not quoted any figures of immediate results; they give little information and express a personal opinion, but to be able to state whether a patient is alive or dead some six or ten years after discharge is to possess data of real value. It is such records that we want more of. The lack of control figures for consumptives treated otherwise than in sanatoriums I deplore. With regard to special treatments and aids, Dr. Lister's experience and opinion are my own. I suppose I have tried every remedy brought forward seriously; individual cases have done brilliantly on most of them when given as an addition to treatment in a sanatorium. If I had to choose two remedies of all those I have made use of, including all so-called specific therapies, I would ask for the old Brompton mixture, mist. sodæ and gent., with a dash of nux vomica and the liquid extract of cascara. Dr Lister asks: Do we all know how we stand in respect of tuberculin and the treatment of mixed infections with vaccines? I know my own position so far as sanatorium practice is concerned, but I cannot speak for dispensary and city conditions generally. The after-history results at Midhurst for the three consecutive years, during which tuberculin was employed largely, are no better than those for any three years during which tuberculin was not used at all; nowadays perhaps it is necessary to add that they are no worse. The same can be said for vaccine treatment.

The Value and Limitations of Sanatorium Treatment as Regards the Working Classes.

Dr. MEEK said that during the three years 1905-6-7, 292 patients, in whose sputa tubercle bacilli had been found, were discharged from the sanatorium at Frimley. Of 266 of these, who were traced to the end of the first year following that of their discharge, 65·8 per cent. were well and working, 24·4 per cent. were alive, and 9·8 per cent. were dead. Of 245 traced to the end of the second year following that of discharge, 56·8 per cent. were well and working, 21·6 per cent. were alive, and 21·6 per cent. were dead. Of 209 similarly traced to the end of the fifth year following that of discharge, 38·8 per cent. were well and at work, 14·8 per cent. were alive, and 46·6 per cent. were dead. These 292 were selected cases, carefully chosen by the physicians to the Brompton Hospital, and the great majority had undergone preliminary treatment at that institution, thus being under consecutive treatment for a very considerable period. The chief factors responsible for this rapid loss of working capacity in a high proportion of cases were, in the main, well recognised, and in certain directions lay opportunities for improvement—e.g.: (1) the return to faulty environment; (2) the lack of provision for prolonged treatment; (3) and for re-treatment; (4) the admission of cases unsuitable on grounds other than medical; (5) the need for earlier diagnosis.

To demonstrate the beneficial result of change of environment Dr. Meek showed tables contrasting the immediate after-histories of two groups of cases.

(A) During 1915 a group of 32 cases, presenting important features in common, left the sanatorium. They all came from urban working conditions. In all tubercle bacilli were present in the sputum at the commencement of treatment; in none were they so found at its conclusion. The average number of lobes of the lungs in which any signs of disease had been noted was 1·8. They formed an excellent collective example of the "good sanatorium case," and were classified on discharge as instances of "apparent arrest" of the disease. They all returned to the homes and working conditions in which they had broken down previously. The majority of the patients were of distinctly the better working-class type. Their homes generally were clean and not obviously insanitary, sleeping arrangements satisfactory, and wages good. The work to which they returned was of very varied character, but as a whole, neither particularly arduous nor dangerous. All those still alive had been traced up to the latter half of the present year (1917). Of these 32 people, at the time of the latest reports (averaging two years and a few months from the date of discharge) 10 (31·2 per cent.) were well and at work and had kept so; 5 (15·7 per cent.) were "fairly well" and still at work; 8 (25 per cent.) were alive, but unable to work; 9 (28·1 per cent.) had died.

(B) In the same year, 1915, out of a number of cases of relatively good prognosis who were recommended to secure improved conditions 44 were able to effect a change for the better. They were not specially selected as having only slight pulmonary lesions, for in a considerable number such lesions were quite extensive. Nevertheless, they all appeared capable of doing a reasonably full day's work and to have a fair chance of maintaining working capacity in healthy surroundings. In all tubercle bacilli were present in the sputum at the commencement of treatment, in 23 they were still present on discharge, in 21 they were not so found. The average number of lobes of the lungs in which any abnormality had been noted was 2·2. All have been traced into the latter half of the present year. They form a group roughly comparable to the one analysed above. Twenty-nine effected a change of both residence and occupation, five a change of occupation only, while ten found situations at their former employment in more suitable localities. Many made the change unaided except with advice, to others help was given in the search for work or in the removal of the home, for some situations were found, and for a few courses of instruction in motor-driving, &c., were provided. Six joined the Forces. In most instances the work and surroundings which they were able to secure were far from ideal, but constituted a marked improvement on their former conditions. Of these 44 individuals, after a lapse of time averaging a few months over two years and excluding one who was accidentally killed, 35 (81·4 per cent.) have remained continuously well and at work; 6 (13·9 per cent.) are well and at work, but have had time off from work for illness and in 4 cases further institutional treatment; 1 (2·3 per cent.) is fairly well, but not at work; 1 (2·3 per cent.) has died.

The lists, although far from being accurate statistical tables, illustrated fairly the rapid wastage on return to urban industrial life and the improved outlook under better conditions. It seemed possible that the attempt to return to working-class life in cities of large numbers of discharged sanatorium patients who were, or had been recently, cases of "open" disease might have to be abandoned as entailing great waste of life, labour, and money.[1]

[1] We hope to publish Dr. Meek's paper in full in our next issue.

Mr. H MORRISTON DAVIES stated that the great barrier to successful medical treatment in all but the earlier stages of pulmonary tuberculosis were the mechanical disabilities. These disabilities appeared almost from the commencement. In chronic cases they gave rise to symptoms more serious even than the primary disease. They were due, on the one hand, to the fibrous tissue formation in the lung and in the pleural membranes and, on the other hand, to the anatomical and physiological conditions of the lung, of the pleural cavity, and of the surrounding walls. At first contraction of the lung due to the fibrosis could be to a great extent equalised by the falling in of the chest wall, by the displacement of the mediastinum and diaphragm, and by emphysema of the healthy parts of the lungs. An early case was, in fact, one in which the mechanical disabilities were easily compensated for in this manner. Striking improvements and even arrest of the disease could be expected, therefore, by medical treatment. Once this stage was past, and with the increase of the fibrosis, of the bronchial dilatation and secondary infection, and the development possibly of cavities, a temporary improvement only could be hoped for unless the mechanical disabilities were compensated by surgical intervention. The four methods available were: 1. Nitrogen displacement, with stretching, division, and even rupture of adhesions when necessary. 2. Partial replacement of the lung and parietal pleura by foreign substances when the disease was localised and nitrogen displacement was impracticable owing to pleural adhesions. 3. Rib mobilisation, by which operation the lung, together with the chest wall, were collapsed. This operation was a more serious one than nitrogen displacement, and was therefore done only when the latter was impossible. The type of case must be much more rigidly selected, and the results obtained were extremely gratifying. All these methods produced a general or local collapse of the lung; they allowed the fibrous tissue to contract without causing distortion of the intra- and extra-pulmonary structures. Interstitial and bronchial cavities were obliterated and the serious effects of secondary infections were abolished. The lung was at rest and the symptoms subsided. The patient was thus placed in a condition in which medical and hygienic treatment could be employed with most beneficial results. 4. Paralysis of the diaphragm by section of the phrenic nerve in the neck. The affected half of the muscle was relaxed and rose into the thorax. The symptoms due to distortion of the diaphragm owing to basal adhesions or to the drag on the muscle during nitrogen displacement were abolished. There was a reduction in the size of the lower part of the pleural cavity and a partial collapse of the base of the lungs. This was of great benefit in cases of tuberculosis or of dilatation, whether primary or secondary, of the bronchial tubes of the lower lobe. Surgical intervention must not be regarded as a method of treatment which could be carried out independently of the medical. The best results were obtained by the closest combination of the two.

The debate will be continued on Nov. 19th, when Sir R. Douglas Powell, Sir Arthur Newsholme, Dr. F. R. Walters, Dr. A. Niven Robertson, Dr. G. A. Crace-Calvert, and Dr. J. J. Perkins are expected to take part.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held at the West London Hospital on Nov. 2nd, Dr. A. J. Rice-Oxley being in the chair. Major W. McAdam Eccles demonstrated by means of photographs and microscopic slides an unusual case of Hermaphroditism, described as of neutral sex. The external sexual characteristics were those of a female, but testes in a low state of development were present and the uterus was absent. Dr. T. Grainger Stewart and Dr. Reginald Morton showed a case of Œsophageal Diverticulum, in which the foul breath and eructations of decomposed food frequently associated with the condition were absent. Dr. Morton, among other cases, showed a skiagram of a stomach distended by a hairball, in which the diagnosis was made by means of X rays and afterwards confirmed at operation. Mr. Aslett Baldwin showed a man who had had calculi removed from both kidneys and the left ureter, and who now had hernial protrusions from all three operation wounds. He had recently undergone operation for radical cure of a left inguinal hernia. Dr. E. A. Saunders, Dr. H. S. Souttar, Dr. S. A. Owen, Dr. G. Pernet, and Dr. Guesada exhibited other cases, or skiagrams of cases, the latter in conjunction with Dr. Morton. After an interesting discussion the meeting terminated.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ELECTRO-THERAPEUTICS.

Necessity for Education in Radiology and Electro-therapeutics. —The Coolidge Tube.

AT the opening meeting of this section, held at the Royal Society of Medicine on Oct. 19th, Dr. G. HARRISON ORTON, the President, gave an address on the Necessity for Education in Radiology and Electro-therapeutics. He pointed out the unsatisfactory status, in this country, of radiology and electro-therapeutics and of those who specialise in these subjects The present condition of affairs was unfair to the patient, who was often the chief sufferer, and unfair to the radiologist and electro-therapeutist. It was due to defective education, and therefore before any improvement could be expected to take place some scheme of education must be devised. The July number of the *American Journal of Roentgenology* contained a statement on the action of the U.S.A. military authorities in the organisation of X ray work for Army purposes which was in striking contrast to the methods adopted in this country. Schools for the teaching of military radiographic work had been established in charge of experts in different parts of the country, under the direct control of the Surgeon-General. Medical officers intending to do X ray work attended for three months' instruction, and were then accepted or declined according to the ability shown. Arrangements were made for the X ray examination of recruits, especially from the point of view of the condition of the chest. The numerous methods for the localisation of foreign bodies were considered, and three methods were selected to be taught thoroughly. The U.S.A. Government was defraying the expense of this organisation and teaching, and officers drew during the course of instruction the pay of their respective ranks. In this country, Dr. Orton said, practically the whole of the organisation of military X ray work had been carried out without any consultation with prominent radiologists. The authorities evidently failed to recognise either radiology as an important branch of medical science or the radiologist as a specialist. And the same thing applied with perhaps even more force to electro-therapeutics. In view of this serious situation a committee of the Section of Electro-Therapeutics was appointed in March last and a scheme had been elaborated to provide for: (*a*) A central organisation in London, housed in an institute, where teaching facilities would be available in the scientific part of the curriculum, the practical experience being available in the large hospitals. Later, if necessary, centres could be started in other towns. (*b*) A post-graduate diploma in Cambridge where a research hospital would be built. This hospital would be devoted to the scientific investigation of the many physiological, pathological, and physical problems that are waiting to be worked out. It would also be available for those who wished to work on various problems, and especially for those who were investigating with a view to the M.D. thesis. Dr. Orton concluded that as a result of what had been already done no doubt existed that the Cambridge part of the scheme could soon be in active being if the necessary financial support could be arranged. It remained to see that the London scheme was put upon a sound basis so that the two might be able to coöperate in practical teaching and research work, and provide those who desired to study these subjects with conditions of so doing comparable with the facilities available in other countries.

Dr. F. HERNAMAN-JOHNSON described a modification in the use of the Coolidge Tube of interest to those radiologists who work with a coil outfit on continuous current mains arranged on the usual "three-wire" system. Hitherto accumulators have had to be used for the heating circuit, owing to the fact that this circuit was always, with the usual connexions, charged at a high potential. Shorten and Barnard have recently shown that a tube will work perfectly well if the negative pole of the coil be grounded, and this led Dr. Hernaman-Johnson to experiment with direct heating of the filament through suitable resistances. He places these on the "neutral" side of the house supply, and connects the negative pole of his coil to them, so that earthing of the high-tension circuit takes place at the power station through the neutral wire. A steady heating current is thus obtained and the controls can be handled without any risk of shock. Dr. Hernaman-Johnson pointed out that if in future the filament of the

tube can be made suitable for 200 250 volts, a very simple resistance will suffice, and there will be no waste of current. He also showed that all the controls and meters both for coil and tube may be assembled on one trolley switchboard close to the operator's hand. These new arrangements should greatly facilitate the use of the Coolidge tube. The experimental stage may be said to have been passed, as the system has been in use for two months at the Cambridge Hospital, Aldershot, and over 200 treatments have been administered with the Coolidge tube heated in the manner described.

SECTION OF LARYNGOLOGY.

Exhibition of Cases and Specimens.

A MEETING of this section was held on Nov. 2nd.

Dr. A. BROWN KELLY, the President, having delivered a brief introductory address from the chair,

Sir STCLAIR THOMSON showed a girl, aged 15, who suffered from a Fusiform Dilatation of the Œsophagus apparently Idiopathic. He demonstrated that the interior of the cavity was lined by plaques of white material which consisted largely of oïdium albicans and other bacteria. Lavage with various antiseptics, including eusol, had failed to get rid of the infection. Œsophageal bougies passed into the stomach with the greatest ease.—Dr. WILLIAM HILL suggested that treatment by ionisation might be successful. The PRESIDENT advised dilatation of the lower end of the œsophagus.

Dr. IRWIN MOORE showed a boy, aged 8, with Lupoid Tuberculosis of the Soft Palate, and who was also the subject of congenital syphilis. The soft palate and uvula were solid, rigid, and leathery; there was œdematous infiltration of the posterior pillars of the fauces, the epiglottis, and arytenoids. Adenoids had been removed and shown to be typically tuberculous under the microscope. A cervical gland also showed caseous areas and giant-cell systems. Wassermann reaction was strongly positive. The blood count showed no characteristic changes.—Professor S. G. SHATTOCK said that he had examined sections of the uvula under the microscope. In his opinion the lesion was tuberculous, although the picture was not characteristic and no tubercle bacilli had been found. He considered the condition comparable to lupus erythematosus of the face.

Dr. P. WATSON-WILLIAMS exhibited a number of drawings of the naso-pharynx as seen through the endorhinoscope. He was in the habit of using Dr. Holmes's modification of Valentin's instrument and employed it in preference to the rhinoscopic mirror. The instrument was of real value in enabling one to obtain a good view of the Eustachian tubes and fossa of Rosenmüller and in tracing the source of pus seen in the naso-pharynx.

Major H. D. GILLIES and Mr. G. S. HETT showed patients who were under treatment at Sidcup for war injuries to the nose and face. Stages in the formation of a new nose were shown. Rib cartilage had been grafted under the skin of the forehead and was then brought down to form the bridge of the new nose. Great interest was aroused by these cases, but discussion was postponed.

Other cases and specimens were shown by—

Dr. DAN MCKENZIE: Epithelioma of the Ethmoidal Labyrinth; removal by lateral rhinotomy.

Mr. NORMAN PATTERSON: 1. Excision of the Upper Jaw for Carcinoma of Antrum and Palate, followed by Diathermy. 2. Excision of the Retro-pharyngeal Gland for Recurring Retro-pharyngeal Abscess of Tubercular Origin.

Dr. W. H. KELSON: 1. A Tonsil Forceps. 2. Paralysis of the Left Vocal Cord in a man aged 39.

Dr. IRWIN MOORE: 1. Tertiary Syphilis of the Pharynx in a female aged 44, clinically resembling tuberculosis of a lupoid type. 2. Complete Paresis of the Left Vocal Cord, due to a mediastinal growth.

Mr. J. L. AYMARD: 1. New instruments. 2. Septum specimens. 3. Rhinoplastic cases.

Mr. F. A. ROSE: Sarcoma of the Antrum.

Sir WILLIAM MILLIGAN: 1. A Piece of Mutton Bone removed from the entrance to the œsophagus. 2. Photographs showing removal, with the aid of the fluorescent screen, of a pin lying in the second division of the left bronchus (pin shown). 3. Fibro-papilloma of Trachea; removal by external operation; recovery. 4. Fracture of Four Rings of the Trachea; urgent dyspnœa, operation, recovery.

Mr. WALTER HOWARTH: Case of Complete Laryngectomy.

Reviews and Notices of Books.

1. *Studies in Malaria.* By HUGH STOTT, M.B., B.S. Lond., Captain, I.M.S. Calcutta and Simla: Thacker, Spink, and Co. 1916. Pp. 190. Price 10*s.* 6*d.* net.
2. *A Plea and Plan for the Eradication of Malaria throughout the Western Hemisphere.* By FREDERICK L. HOFFMAN, LL.D., Statistician to the Prudential Insurance Company of America. Being an address read in abstract before the Southern Medical Association in Atlanta, Georgia, on Nov. 14th, 1916.

1. THIS book is of real interest and gains from the unconventional way in which the subject is approached. One of the most valuable sets of observations recorded is that of a prophylactic quinine experiment. The prophylactic dose was 15 grains thrice weekly for five months (none for two months when the regiment was in the hills) and 10 grains thrice weekly for nearly six months.

October, 1911, to September, 1912.	Total strength.	Total fever admissions.	Rate per 1000 strength.	Primary admissions.	Rate per 1000 strength.
Cos. A, C, E, G, (taking quinine)	3931	259	65·8	170	43·2
Cos. B, D, F, H, (not taking quinine)	3900	265	67·8	179	45·8

The facts to be found in the literature with regard to quinine prophylaxis are most unsatisfactory. The question could have been settled years ago by a system of "half with" and "half without" quinine, but unfortunately even at the present day the matter is one of dispute. The author's figures with regard to a curative course of quinine are not easy to follow, but apparently by 10 gr. four times a week for four months about 44 per cent. were "cured," the observation period being eight months. It would appear, however, that 75 per cent. of readmissions took place while the patients were actually undergoing the curative course. This seems peculiar and raises the suspicion that the quinine really was not taken. The author's observations on the *total* mononuclear count in malaria are of considerable interest; the percentage of total mononuclears at various temperatures from 105° F. to normal varied from 11 to 81 per cent. To be able to make a diagnosis in the absence of parasites—e.g., in the interval between treatment and relapse in simple tertian malaria—is of the greatest importance, but the value of the mononuclear count requires re-investigation, more especially as to the possible variations in health and disease other than malaria. Nor do we know how long the increase continues after a definite cure.

A defect of the book is the almost complete absence of information about parasites. Malaria, while dealt with from other than the clinical standpoint, is classified too much from that standpoint—e.g., remittent or intermittent character of the fever—whereas a knowledge of parasitic findings would have been of prime importance.

2. We gather from Dr. Hoffman's pamphlet that, by a resolution adopted at the Second Pan-American Scientific Congress held in Washington in 1916, the United States and all Pan-American countries agreed, singly and collectively, to join in an effort to eradicate malarial diseases from the Western Hemisphere. As a result of this resolution, a "National Committee (of the United States) on Malaria Eradication" was formed, of which Dr. Hoffman is a member, and he appears to have written the present treatise with the view of assisting the committee in the object they have in view. The thesis is divided into three parts: Part I., "A Plea for Organised Action"; Part II., "A Plea for Organised Prevention and Control"; and Part III., "Some Essential Statistical Considerations."

The first part contains a résumé of what has been accomplished in diminishing the prevalence of malaria in different parts of the world. Stress is laid on the fact that, despite the great wealth of the country and the extensive prevalence of the disease in certain of the Southern States, no comprehensive scientific research in connexion with malaria has as yet been undertaken in America. Apparently

the governing bodies do not fully realise the importance of the problem. In the author's opinion, action by the Government is essential to the success of any scheme for the eradication of the disease. He states that in recent years some valuable local surveys have been made by the United States Public Health Service, and many scientific papers and reports have been contributed on important technical aspects of the distribution, prevention, and control of malaria, but the effect of such work has been negatived in large measure by want of the necessary coördination of municipal, State, and Federal effort. A brief description is given of the methods employed, with such excellent results, for the eradication of malaria in the Panama Canal Zone—a model which might, with necessary modifications, be adopted in other parts of America.

Part II. deals with, and enlarges upon, the general aims and objects of the National Committee, as agreed upon at a meeting held in Washington on May 16th, 1916. The functions of this committee may be briefly summarised as follows: (*a*) To stimulate the scientific and public interest in malaria problems; (*b*) to serve as a medium through which societies and individuals may become identified with the study and prevention of malarial diseases; (*c*) to coördinate the efforts of these agencies with those of constituted Federal, State, and local authorities. It is clearly recognised that the success of any scheme depends upon adequate financial support from the Federal Government, and it is hoped that a Bill may be introduced into Congress to legalise the necessary expenditure. In addition to Federal, State, and local government coöperation, it is regarded as essential that the more important international, national, and corporate health-promoting agencies should also lend their aid in the furtherance of the practical as well as the theoretical work of the National Committee. Among other suggestions for the prosecution of the campaign the following may be enumerated. It is proposed, for example, that malaria and mosquito surveys should be made, and that the public should be educated in the importance of preventive measures. The provision of facilities for the free microscopical examination of the blood is advocated to assist in the diagnosis of the disease. The establishment of State drainage commissions and drainage districts is necessary in order to get rid of flooded areas and swamps which are a menace to health. The establishment of hospitals for the treatment of patients is regarded as a matter of importance. It is also suggested that consideration should be given to the question of how far use might be made of the natural enemies of the mosquito as a means of diminishing the prevalence of that parasite; for example, it should be ascertained whether certain fishes have been found useful for this purpose in the West Indies and Hawaii.

In Part III., with reference to certain statistical considerations, it is pointed out that the extent of morbidity cannot be accurately ascertained from mortality returns in view of the fact that the fatality rate in malaria varies considerably according to the form of the disease. Recent malaria mortality statistics for 34 American cities are given in Table IV. of the Appendix. According to this table the average rate of mortality from malaria was reduced from 8·9 per 100,000 for the 5 years ending with 1904 to 3·2 during the 5 years ending with 1914. There was, therefore, an actual reduction of 5·7 per 100,000 of population, equivalent to 64 per cent. Such figures give ground for hope that much may be accomplished by the present attempt to diminish the prevalence of malaria in the Western Hemisphere.

LIBRARY TABLE.

Rustic Sounds. By Sir FRANCIS DARWIN, F.R.S. London: John Murray. 1917. Pp. 231. Price 6*s.* net.—This book is a delightful collection of studies in literature and natural history, made up of reprinted essays and lectures and addresses delivered to such various bodies as the Eugenics Education Society, the British Association for the Advancement of Science, the Association of University Women Teachers, and the Society of Morris Dancers. It may be described as the artistic diversions of a man of science. Sir Francis Darwin is a devout lover of the beauties of nature, and was born and bred in an atmosphere of such love. In the papers entitled "The Movement of Plants" and "A Lane in the Cotswolds," as in the essay which lends a name to his volume, he gives us charming intimate glimpses of a very full knowledge of birds, trees, and plants; they are the result of studies by one who is artist and man of science combined. His experiments undertaken to prove that the "gravitation sense" of roots is to be found in the root-tip are detailed, and the interest which, it will be remembered, was evoked by these observations is renewed by re-reading them, as well as his well-known speculations on the memory of plants. Sir Francis Darwin does not agree with any theory of animal automatism. "The Pipe and Tabor" is a discourse on early rustic musical instruments, in which full justice is done to the work of that most retiring of antiquaries and medical students, the late Mr. Christopher Welch. Pipes have a fascination for Sir Francis Darwin as they had for Welch; he talks of them in "Rustic Sounds," where his personal knowledge of how to make a whistle out of a chestnut twig (elder twigs, by the way, are as often used) enables him to convict an erudite reviewer of "talking through his hat." Of course Sir Francis Darwin is an admirer of Jane Austen, and his essay on her and his tribute to her memory on her centenary is accurate and typical. He speculates on matters of heredity and eugenics, as typified by the Bennets, the Woodhouses, and the Elliots, and deplores, as other Austenites have done before, that this keen and kindly psychologist did not introduce her characters into succeeding novels, so that we could have been told what kind of children, for example, Elizabeth Darcy had. Included in the book are addresses on Francis Galton, Stephen Hales, "the father of physiology," and his brother, Sir George Darwin, the mathematician, the collection coming to an end with a delightful paper on "Dogs and Dog Lovers."

What Every Masseuse Should Know: Comfortable Grasps for Joint Movements. By VERA WADDINGTON. With Prefatory Notes by Sir RICKMAN J. GODLEE, Bart., K.C.V.O., and Mrs. ANNIE E. STEWART, and an Introduction by LAURA FAIRBAIRN. With 47 illustrations by the Author. London: Methuen and Co., Limited. 1917. Price 2*s.* 6*d.* net. Pp. 105.—Miss Vera Waddington, in a practical and admirably illustrated little book, supplies the masseuse (and presumably the masseur) with exactly what should be known by an operator who desires that the help she gives to a patient should be based upon a right understanding of principles. Massage is a combination of active and passive movements with manipulations designed to develop the action of the muscles and the mobility of the joints. Passive movements on the relaxed joints are usually performed to the extreme limit of the articulation and are carried out by the masseuse. Active movements, when free, are made by the patient under instruction of the masseuse, and when restricted are made during the introduction of resistance either by the patient or the masseuse. It is clear that throughout a course of massage the treatment can only be administered with full advantage if the operator understands what are the movements of joints, what are their capacities, and what are the muscular factors concerned here, or in breathing movements, or movements of the trunk and the head. Miss Waddington's book sets out in detail the foot, leg, hand, arm, and head movements that should be employed, and all the descriptions in the text for effecting the various abductions, adductions, flexions, extensions, and rotations are supported by the best drawings in illustration of such subjects that we have ever seen. She delineates in outline the positions to be taken up by patient and operator in the numerous movements, explaining the grasps to be employed and the manœuvres for obtaining mechanical advantage for their performance. The third part of the book deals adequately with breathing exercises. We endorse the words of Sir Rickman Godlee's prefatory note, that "it is almost safe to prophesy that her book will have the success which it undoubtedly deserves."

DONATIONS AND BEQUESTS.—By the will of the late Mrs. Rose Annie Leir, of Bristol, the testatrix left the residue of her estate, which will amount to between £4000 and £5000, as to one-fourth in trust for the Bristol Royal Infirmary, one-fourth in trust for the Bristol General Hospital, and one-fourth to the Bristol Asylum or School of Industry for the Blind at Bristol.—The late Mrs. Helen Simpson-Hinchliffe has bequeathed by will £500 to the Halifax Royal Infirmary.—By the will of the late Mr. S. G. Harrison, of Sheffield, the Sheffield Royal Infirmary and the Sheffield Royal Hospital and Dispensary will receive £1000 each, and the Children's Hospital and the Jessop Hospital £600 each. The University of Sheffield also benefits largely under the will.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 17, 1917.

The New Voluntary Rationing Scheme.

THE scheme of voluntary rationing outlined by Sir ARTHUR YAPP this week should appeal to all classes of the community. When we are assured that a faithful adherence to the limited amounts of the staple foods set forth will save a grave situation, it becomes a national duty on the part of everyone to fall into line, while what strikes us at once is that no hard dietetic or physiological sacrifice is called for. Economy essentially is enjoined for the staples, but, of course, economy is desirable also as a patriotic effort in regard to all foods. The staple foods are bread, flour and other cereals, meat, butter, margarine and lard, and sugar. There is no rationing suggested outside this list, and it will occur to many in what directions the foods in the rationing scale may be supplemented or replaced. Potatoes, for example, are not included, and as a valuable source of carbohydrate supply they may be largely employed to eke out the stock of scheduled food-stuffs and so save the staples. In addition, an exchange can be made in certain cases, notably with regard to bread and meat. Thus, any person may take half a pound of meat over and above his meat ration in exchange for half a pound of bread to be deducted from his bread ration, and conversely any person may take half a pound extra of bread in exchange for meat. The scheme bears evidence of being well thought out from the economic point of view, while it provides a physiological sufficiency for all. The public would do well to bear this point in mind, for it is important to remember that a voluntary rationing scheme which provides amply for all physiological needs is much less a hardship than actual famine, while its adoption means the releasing of so much tonnage, and adding to the efficiency of transport services. In plain words, the individual who loyally enters into the spirit of the scheme is helping to win the war, *and is doing so in contradiction to no law of physiology or of medicine.*

It is easy to see that the Director of National Economy was guided in drawing up the scheme by the advice of recognised scientific authority. We find in it, for example, the substance of a number of recommendations contained in an article entitled "The Food of the Nation" by Dr. EDMUND SPRIGGS, which was published in THE LANCET of Feb. 10th, 1917. The valuable report on "The Food Supply of the United Kingdom," drawn up by a committee of the Royal Society last year, has, no doubt, also been of assistance. It will be remembered that this Committee included the professors of physiology in the Universities of London, Glasgow, and Dublin, and the professor of bio-chemistry in the University of Cambridge.

The following table gives at a glance the proposed new rations:—

Adult Rations Per Head Per Week.

	Bread. lb. oz.	Other cereals. oz.	Meat. lb. oz.	Butter, Margarine, Lard, Oils, and Fats. oz.	Sugar. oz.
MEN.					
1. Men on very heavy industrial work or on agricultural work	8 0	12	2 0	10	8
2. Men on ordinary industrial or other manual work	7 0				
3. Men unoccupied or on sedentary work	4 8				
WOMEN.					
4. Women on heavy industrial work or on agricultural work	5 0	FOR ALL ADULTS.			
5. Women on ordinary industrial work or in domestic service ...	4 0				
6. Women unoccupied or on sedentary work	3 8				

The "bread" rations include all flour, whether used for bread or for cooking. Flour may be taken instead of bread at the rate of ¾ lb. of flour for every pound of bread.

The "other cereal" rations include oatmeal, rice, tapioca, sago, barley meal, cornflour, maize meal, dried peas, beans and lentils, and all cereal products except bread and flour. The weight given is the weight of the dry article, as bought. If the full bread ration is not used, the amount saved can be taken in other cereals at the rate of ¾ lb. of cereals for every pound of bread saved.

The "meat" rations include the average amount of bone, which may be taken as one-quarter of the weight of the actual meat. Any parts of meat (such as rump steak, bacon, or suet) which are bought without bone must count for one-quarter more than their actual weight. On the other hand, any bone in excess of a quarter of the actual meat bought may be deducted. Poultry and rabbits may be counted at half their actual weight. The meat rations include suet.

It will be seen that Sir ARTHUR YAPP divides the population into six sections, three for men and three for women. Children are to receive their reasonable ration of essential foods, and, as their needs differ so greatly, a definite ration has wisely been omitted for them. Broadly, the scheme provides more bread but less meat and sugar. The discrimination in regard to individuals in different occupations in life is well in accord with physiological considerations and common-sense. Clearly, the allowance should be highest for those carrying out heavy industrial or agricultural work. Next to be considered come those employed in ordinary industrial work, while unoccupied persons or those engaged in sedentary occupation will admit that the food demands in their case must come last. This class includes the more thoughtful section of the population, and they will recognise the simple truth that the machine which is doing most work requires most fuel. This important point was missed, we think, in previous proposals which provided, for example, an all-round weekly allowance of 4 lb. of bread or its equivalent in flour. Sir ARTHUR YAPP now lays down that men on heavy work should have a weekly allowance of 8 lb. of bread, women 5 lb., men engaged on industrial work 7 lb., and women 4 lb., and sedentary persons (men) 4 lb. 8 oz. and (women) 3 lb. 8 oz. Cereals other than bread are now rationed at 12 oz. per week all round. Previously there was no control in regard to these allowances. The quantity of meat allowed to both men and women is 2 lb., as against 2½ lb. under the former proposals. Fatty foods, butter, margarine, and lard, also were not previously rationed, but now they come under an allowance of 10 oz. per week, to which no exception can be taken physiologically, though the difficulties of cooking are obviously increased. The allowance of sugar was previously ¾ lb., but it is now fixed at 8 oz., where it has been for some time.

These are the principal features of the scheme. Lord RHONDDA, the Food Controller, has definitely stated that unless the new scale of voluntary rations is generally adhered to there is nothing for it but compulsory rationing. We feel confident that the nation will not wish such an undesirable conclusion to the attempts to deal with our food problems in terms free from coercive measures. The rationing suggested is eminently reasonable and designed to inflict no excessive hardship on anyone; it is easily a living allowance. The success of the scheme depends, of course, on the temper of the nation; but that should not be in doubt when the assurance is clear that the allowances set forth are adequate to individual needs.

War-time Prescribing and Dispensing.

WHEN, some three months ago, an order of the General Medical Council was gazetted which deleted from the British Pharmacopœia, until further notice, preparations containing glycerine or sugar, it was suggested in THE LANCET that an authoritative series of formulæ should be established to take the place of those which had been withdrawn. Some such action as this was clearly necessary in order to secure uniformity in dispensing and so obviate the probability of a patient being supplied with two different kinds of medicine dispensed according to the same prescription. Within a short time of the gazetting of the General Medical Council's order the Pharmaceutical Society set in motion the necessary machinery for preparing a series of formulæ, and these have now been published as an addendum to the "British Pharmaceutical Codex," 1911. This addendum contains not only substitutes for pharmacopœial compounds, but substitutes for other commonly prescribed glycerine and sugar preparations, the number of formulæ being over a hundred. Generally speaking, the substances which replace the sugar in the pharmacopœial formulæ are: (1) A mixture of tragacanth, chloroform, and distilled water, known as syrupus factitius or syrup substitute; and (2) diluted glucose, consisting of 90 parts of glucose and 10 parts of distilled water. In cases where these are not used the sugar is omitted altogether, as in cod-liver oil emulsion; in compound liquorice powder the sugar has been replaced by maize or rice starch. Where glycerine has been replaced by tragacanth and chloroform, as in the glycerines of carbolic and tannic acid, the strength has been diminished, since the preparation in its new form is less viscous and more readily absorbed. In a considerable number of preparations it has been possible simply to omit the glycerine. A list of these and specimen formulæ containing sugar and glycerine substitutes is given on p. 766.

It remains to be added that the Pharmaceutical Society has submitted these new formulæ to the British Medical Association, and it has been mutually agreed that as from Dec. 1st the new preparations should be used for prescribing and dispensing all new prescriptions. So far as dispensing under the National Health Insurance scheme is concerned, it is understood that all local insurance formularies will be revised simultaneously on the appointed date by the substitution of the new formulæ for the deleted Pharmacopœial preparations in the place of the ingredients in any formula including glycerine or sugar. This will not entail the reprinting of the formularies if both panel practitioners and pharmacists are instructed by their respective committees that the new alternative formulæ must be used. It will not be necessary for prescribers to concern themselves about the names of these modified preparations, as the original titles have been retained and the doses remain approximately the same. It will suffice, therefore, if the prescriber merely adds W.E.F.—which means, of course, War Emergency Formulary—to the name of the preparation. It has not been possible in many cases to preserve all the physical properties of the original glycerine- and sugar-containing preparation as regards either appearance or taste, and it will clearly be advisable for the pharmacist who dispenses an old prescription containing a sugar or glycerine ingredient to inform his client that any difference that may be noted in the medicine is due to a war-time emergency exchange of adjuvants or other components, and that the activity and efficiency of the medicine have been in no way impaired by the modification.

Annotations.

"Ne quid nimis."

AUTOMATIC WANDERING.

AT the request of the Minister of Pensions the Local Government Board has forwarded to the various boards of guardians a brief Memorandum on automatic wandering. It appears that the Minister of Pensions has had his attention drawn to certain cases of discharged soldiers "suffering from neurasthenia or epilepsy, and that symptom of these conditions which is described as 'automatic wandering,' and is often accompanied by loss of memory." In these cases soldiers have occasionally found their way to Poor-law institutions and have been there detained for observation in the mental ward, and have in some instances, it appears, been sent to a lunatic asylum. The suggestion is made that where any such men are received in a Poor-law institution inquiry should be made of the Special Medical Board for Neurasthenics "to ascertain whether neurasthenia was the cause of discharge from the Army" before arriving at any conclusion as to the disposal of such cases. It is satisfactory to learn that official cognisance is now taken of a difficult class of case, which, though no doubt small in numbers, is deserving of intelligent investigation and in no way merits summary treatment. In the ordinary civilian instances of the condition the diagnosis in practically every case lies between hysteria and post-epileptic confusional states, and to come to a definite conclusion is not always easy. To take the latter first: there may, of course, be a definite history of major epilepsy or obvious evidence of epilepsy, under which circumstances

difficulties are not likely to arise. There may, however, be but the briefest of *petit mal* attacks, which have escaped observation and are quite out of proportion to the severity and duration of the confusional state. Where such is the case it is imperative to keep the patient under careful observation, and this is the more easy as in post-epileptic fugues the total duration is certain to be shorter than in many cases of hysterical fugues. In the latter the condition may continue for days, weeks, or months. It may be associated with a complete change in personality, as in the historical case of the "Lady of MacNish," and in many others recorded by Raymond, Janet, Courtney, Coriat, Morton Prince, Weir Mitchell, and others. Some two years ago a case attracted not a little public attention in which a well-known tennis player was found unlawfully trespassing on the Grosvenor-road railway bridge and was sentenced to six months' imprisonment, but on appeal was able to show that he suffered from automatic wandering. The case was commented on in our columns[1] at the time and its significance noted. Fugues are not symptoms of neurasthenia, properly so-called, but of hysteria, and we suppose it may be owing to the inexact popular use of the latter term that the authorities seem to be unwilling to refer to it in official communications on functional disease. The importance of the Memorandum consists in its appeal to medical officers to be on the look-out for certain of the more uncommon phenomena of nervous disease and to familiarise themselves with the possibility of their appearance. One of the highest manifestations of medical knowledge is precisely the recognition of the nature of a case of which no previous instance has come under the notice of the observer, but if he does not know what to look for he can scarcely be expected to avoid mistakes. Of these undoubtedly one of the most unnecessary is the transference of an unrecognised case of automatic wandering to a lunatic asylum. Signs are not wanting that an outcome of the medical lessons of the war will be a resolve to improve on the, at present, altogether inadequate standard of teaching in nervous and mental disease in this country.

CHESTNUTS AND ACORNS IN WAR SERVICE.

THE suggestion that the horse chestnut might be used to save a certain amount of food material as a source of carbohydrate in the manufacture of munition agents has, we believe, been widely acted upon, and a substantial collection has been made. In an annotation on the subject in THE LANCET of June 16th we pointed out that probably the acorn would serve a similar purpose, and perhaps this suggestion has caught the attention of the authorities, for recent investigations have been undertaken which show that the acorn yields even more carbohydrate than the horse chestnut. At a meeting of the Society of Public Analysts and other Analytical Chemists last week Mr. Julian Baker and Mr. R. F. E. Hilton communicated an interesting paper upon the subject in which are recorded a number of analyses recently made of chestnuts and acorns. In the chestnut the total amount of starch varied from 21·9 per cent. to 47·8 per cent., and the total sugars from 11·7 per cent. to 19·1 per cent.; in the acorn the starch varied from 55·7 to 57·1 per cent., and the total sugars from 6·8 to 8·98 per cent. The variations in the cane-sugar content, it is pointed out, may possibly be correlated with the degree of ripeness. The diastase in the chestnut behaves like the diastase of an ungerminated cereal. No diastase was found in the acorn either before or after germination. The authors state that acorns or chestnuts, with their full moisture content, yielded after hydrolysis with acid from 11·5 to 12·7 per cent. of alcohol, or 32 to 36 gallons of absolute alcohol per ton of nuts collected. A big collected harvest of acorns and chestnuts, therefore, means that a considerable proportion of food material can thus be replaced by raw products which are not humanly edible.

[1] THE LANCET, August 7th, 1915.

DOUBLE OPHTHALMIA IN CEREBRO-SPINAL FEVER.

AT a meeting of the Société Médicale des Hôpitaux of Paris, MM. A. Siredey and L. Martin reported a case of cerebro-spinal meningitis with a very rare complication—double ophthalmia.

A domestic servant, aged 17 years, became ill with acute cerebro-spinal meningitis on March 14th, 1917. When seen on the third day she was in a state of violent delirium with opisthotonos. The pupils reacted to light and there was slight strabismus of the left eye. Lumbar puncture yielded a milky fluid containing polynuclear cells and meningococci. An injection of 40 c.c. of anti-meningococcic serum was immediately given. On the following day (March 17th) there was no improvement, and the opisthotonos was so severe that the face was absolutely perpendicular to the axis of the neck. There was slight dyspnœa with some cyanosis. The temperature was 100·7° F., and the pulse 70. A slight degree of conjunctivitis was present. Lumbar puncture was repeated, 35 c.c. of thick fluid were removed and 40 c.c. of serum were injected. On the 18th the patient was worse; the temperature was 102·2°, the pulse was 100, the respirations were 62, and the delirium had given place to coma. The left cornea was completely opaque and of a uniform grey colour, and the ocular tension was reduced. There was slight conjunctivitis of the right eye and the lids were stuck together. Several attempts were made to perform lumbar puncture, but only blood mixed with a grumous, almost caseous, substance could be obtained. On the 19th the right eye was in the condition which has been described in the left, the dyspnœa and cyanosis were marked, the pulse was uncountable, and death took place in the evening.

Metastatic ophthalmia is a rare complication of all forms of meningitis. Contrary to what happened in the case under notice, it usually occurs late in the disease. Abundant exudation forms behind the cornea, and the eye becomes soft from atrophy of the globe. The ocular prognosis is hopeless. As a rule, the ophthalmia is unilateral. M. Netter thinks that the position of the patient has considerable influence in determining the eye which is affected, which is usually the eye of the side on which the patient lies. His view is borne out by the present case. The left eye was the first affected, and the patient constantly lay on that side from the onset of the disease, but on the 18th she began to lie on the right side, and the ophthalmia of the right eye followed.

A NEW MANUSCRIPT OF THE HIPPOCRATIC CORPUS.

OF two classical works attributed to celebrated medical authors probably neither was really written by the assigned author. These are the *περὶ ἑβδομάδων* of the pseudo-Hippocrates and the pseudo-Galen's commentary upon the first 17 chapters thereof extant in an Arabic version. The Hippocratic treatise is of far the higher importance because of its extreme antiquity, it having been alluded to by Plato and numerous authors down to recent times, while the information which it affords of ancient pathological

theories is useful. There is a Greek Codex of the work in the Bibliothèque Nationale; also a Latin version there and in the Ambrosian Library. Our reference to the Hebdomad is prompted by the fact that some fragments of the Greek recension were discovered recently, and these have been studied and assigned to the proper places in the Paris Greek text by Dr. von W. H. Roscher, of the University of Athens. Unfortunately, his book "Die Hippokratische Schrift von der Siebenzahl" is published at Paderborn and so not at present available for scholars here. It is a curious thing that among 110 palimpsests, found in various libraries during the last century, from which some valuable portions of classical literature have been recovered, only one containing eight pages of the "Mulomedicina" of Vegetius, which is in the St. Gall library, is of a medical character. Probably medical works were too useful for their parchments to be sold to the scribes to be cleaned and used over again for theological polemics, and sermons of the early fathers.

ANTIDYSENTERIC SERUM AND SERUM DISEASE.

WITH the production of an antidiphtheritic serum of high potency the appearance of serum disease, so frequent in the early days of antitoxic treatment, diminished almost to vanishing point. But the question will become a practical one again in connexion with a serum which is only potent in massive doses. Sir Patrick Manson, in the new edition of his valuable manual,[1] tells us that this is the case with antidysenteric serum even in polyvalent form. In view of the extensive outbreak of dysentery in the Central Empires—in Prussia alone there were 3802 cases in the third week of September with 550 deaths—serum in large doses is now being extensively used, and the opportunity presents of a fresh study of serum disease. Dr. Gottfried Ewald, consulting physician to reserve troops (Landwehr), deals with the results in an article to which first place is given in the *Münchener medizinische Wochenschrift* for Oct. 9th. He distinguishes reactions, whether immediate or accelerated, and serum disease proper. The former, which have their analogue in experimental anaphylaxis, are hardly ever seen in German reserve troops because, as the author says, their youth was, as a rule, passed in the time previous to the introduction of serum therapy. Once in a patient to whom the author gave on successive days 80, 60, and twice 30 c.c. of serum with a further dose of 50 c.c. ten days later, the last dose was followed in two hours by painful swelling at the site of injection and an immediate rise of temperature. In the case of a young Pole who was known to have received diphtheria serum two years before, and to whom on this account the doctor in charge hesitated to give dysentery serum at all, Dr. Ewald adopted without untoward result the Friedberger method of starting with ½ c.c., giving 15 c.c. four hours later, the same dose the next day, and 10 c.c. on the third day. Occasionally, Dr. Ewald thinks, congenital susceptibility accounts for the immediate reaction at the first injection. As we were familiar with it 20 years ago serum disease is characterised commonly by fever and exanthem of urticarial type: more rarely rashes occur resembling scarlatina or measles, or joint pains, swelling of the lymph glands and of the spleen are noted. The diagnosis from typhoid is occasionally difficult in cases with continued high temperature, but the leucopenia of typhoid, although occasionally simulated in serum disease, is much less constant. The incubation period is generally given as 8 to 10 days, but in Ewald's experience was much more variable, at shortest 3 to 4 days, and reaching rarely 14 to 18. Five to 15 days were the more usual limit. He found no difference in the incidence of serum disease from the use of the Höchst serum, the Oberursel serum of Gans, or that of the Saxon Serumworks, and his general conclusion is that no one should be deterred from giving dysentery serum by the fear of anaphylactic reaction, especially as the Friedberger anti-anaphylactic method seems to be effective in critical cases.

[1] Tropical Diseases. Sixth edition. Cassell and Co. 1917. Pp. 968. Price 16s. net.

A NURSES' BENEVOLENT FUND.

AT the request of Sir Arthur Stanley, chairman of the College of Nursing, Limited, the British Women's Hospital has undertaken to raise money to serve the double purpose of an endowment fund for the training of nurses and of a benevolent fund to assist nurses who have suffered mentally or physically in the war. The fund is to be called the Nation's Fund for Nurses, and judging from the success achieved by the British Women's Hospital in raising money for the Star and Garter Home at Richmond their present appeal is likely to meet with the response which it deserves. The question of the relation of this fund to the provision made for nurses in the new Royal Warrant came up in the House of Commons.

Major Chapple asked the Parliamentary Secretary to the Ministry of Pensions whether his attention had been drawn to an invitation for subscriptions to provide endowment for the College of Nursing and a benevolent fund for individual nurses themselves; whether he was aware that this appeal was supported by Sir Douglas Haig on the assumption that the funds so subscribed were to be used for nurses who had lost their health during the war, and that Sir Douglas Haig said that this was most necessary; and whether he would state fully what the Government proposed to do for nurses in order that the nursing profession might be relieved from anxiety in the matter and in order that the subscribing public might know whether the immediate financial need was for a college for the training of women not now nurses or for the help of nurses who had served in the war and had suffered in consequence. Sir A. Griffith-Boscawen replied that he had seen in the newspapers a notice of the fund referred to. He said that the provision made by the State for nurses disabled through war service was set out in the Royal Warrant of August 1st. This provision was on far more liberal a scale than previously, and he did not doubt that the organisers of the fund would take account of the assistance provided by the State in deciding how their funds might best be applied.

It is quite certain, however, that the Royal Warrant will no more meet all the hard situations met with among nurses than it will do so in the case of doctors; and as we have appealed to the generosity of the public in regard to the medical War Emergency Fund, so we do now on behalf of the Nation's Fund for Nurses.

Dr. Alexis Carrel, who was to have delivered the Harben Lectures at the Royal Institute of Public Health in the last week of this month, has been detained by official demand in America.

FOOD ECONOMY.—In connexion with the League of National Safety, which has been formed as part of the Food Economy Campaign, Lady Hunter, the wife of General Sir Archibald Hunter and honorary president of lady workers, will organise voluntary lady helpers to deal with the application cards as they are forwarded to Grosvenor House.

PERFUSION OF THE HEART WITH NICOTINE.

BY D. T. BARRY, M.D.R.U.I., F.R.C.S.ENG.,
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THE action of nicotine on the heart has been investigated by many workers, whose attention has chiefly been directed to the results of dropping the drug upon its surface in various concentrations or by injection into the circulation. A few well-known works bearing on this may be quoted from at the outset.

Pembrey and Phillips[1] state that injection of the drug into the circulation of a frog causes the heart to stop with the ventricle contracted and the auricles engorged with blood. Dropped on the heart in a 0·1 per cent. solution, these observers say that it causes slowing in two or three minutes, and when this occurs stimulation of the vago-sympathetic nerve, which previously stopped the heart, is now incapable of causing arrest, while stimulation of the crescent still causes stoppage. This is interpreted as a paralysis of the pre-ganglionic fibres of the vagus, while the post-ganglionic fibres are unaffected.

Brodie[2] shows a record in which slowing is caused by a weak solution in a few seconds. He states that the drug first stimulates and then paralyses nerve cells and strong doses paralyse nerve fibres.

Stirling[3] says that even with a full nicotine effect sinus stimulation causes acceleration due to excitation of accelerator fibres which have no cell in their course in the heart. There is no account of an appreciable stoppage of the heart under its influence, but permanent arrest by a drop or two of pure nicotine.

In the experiments here about to be recorded the frog's heart was systematically perfused with nicotine in varying strengths and a large number of observations made on more than one hundred hearts of *Rana temporaria*. Some hundreds of graphic records have been obtained.

Method.

The special cannula previously described by me[4] was inserted into the vena cava below the liver as described by Mines.[5]

The nicotine was mixed with Ringer's solution and neutralised with dilute sulphuric acid until the CH was about 1×10^{-8}, as shown by indicators. Neutralisation is important, as the degree of alkalinity of even a very weak solution of nicotine has a deleterious action.

The velocity of flow of the perfusing fluid could be varied by altering the levels of the flasks by a rack and pinion adjustment, a range of 1 to 4 c.c. per minute being given, which was uniform in all three flasks.

The effects of stimulation of the vago-sympathetic nerve, of the intracranial vagus and of the sympathetic, independently, were tried carefully in many instances before, during, and after nicotine action. In this connexion it is necessary to mention that vago-sympathetic stimulation often gives a different result in the heart which is being perfused with Ringer's solution from that given before perfusion was begun. (Fig. 1.) The same applies to stimulation of the intracranial vagus. The lower the pressure of perfusion the greater is the resemblance between the pre- and post-perfusion stimulus. Attention has also been called to this by Ponirovski.[6] Even the tension of the lever threads, especially in the case of the auricle, when no perfusion is taking place, tends to cause escape.

A standard stimulus was employed throughout, the secondary coil being fixed in one position and the primary current from a couple of Leclanché's cells regularly tested with a voltameter. Of 50 frogs examined during the month of March arrest of the heart beat, varying in duration from a few seconds to a minute, was elicited by a vago-sympathetic stimulus in 30. Many of these when perfused and attached to the levers exhibited merely some slowing as a result of the stimulus, but about half of them showed acceleration instead. (Fig. 1.) This record[7] shows that the vago-sympathetic effect in the empty heart (the aortæ were cut) is much slowing, with a great fall of ventricle tone. The ventricle lever was raised between the arrows as it fell on to the signal marker. At the first gap in the tracing the cannula was inserted into the vein and perfusion begun. The third signal shows the changed response to the same stimulus—viz., a marked augmentor effect. The rest of the record will be referred to later.

After 10 or 15 minutes' perfusion the inhibitory effect is often restored or restored in part; at any rate, after this interval the response is pretty uniform.

Action of Nicotine.

It is considered by many that nicotine affects nerve cells chiefly, with little or no depressing action on nerve fibres. Stirling's[8] observation that accelerator nerves are still active with a full nicotine effect suggests the question, What is meant by a full nicotine effect and how is it established? One or two minutes' perfusion with a strong solution, such as 0·5 or 1 per cent. of nicotine, will always cause complete arrest of the beat for several minutes, with loss of irritability of the muscle, and in this phase, of course, there is no contraction, not to mention acceleration, from a muscle stimulus. The stock of material for contraction is not altered in amount by drugs, as mentioned by Burridge.[9] Nor is it diminished by 1 or 2 c.c. of a 0·5 per cent. of nicotine, so that the contractions return spontaneously in such a case, and when they do a stimulus, which, prior to nicotine action caused acceleration, now fails to do so, whether it be through nerve or muscle. (Fig. 2.) This record shows that even a 0·2 per cent. solution can depress accelerator fibres. Of course, it is possible that accelerator action here is merely counterbalanced by inhibitor stimulation at the same time, but this would apply to the pre-nicotine stimulus also. Stimulation of the sympathetic alone has been noticed often to be without effect on rate during nicotine action. First, acceleration caused by a vago-sympathetic stimulus, next the effect of the nicotine is shown, and after some recovery from this the same stimulus fails to cause any acceleration, which it does cause, however, again (third signal) on washing out the drug with Ringer's solution at R. Beyond raising the auricle lever slightly from the great sweeping movements of the lower one at the thick lines and stopping the drum at S and R for about half a minute nothing was changed throughout except the perfusing fluid.

The action of nicotine may be considered from different standpoints. Taking the two factors, (A) nerve and (B) muscle, the relative importance of which in cardiac phenomena has given rise to much discussion, the former exhibits inhibitory and excitor elements and the latter has to be subdivided into auricular and ventricular muscle and the muscle connecting the two, which for convenience is here referred to as the A.V. bundle.[10] The effect of the drug, too, on the output of the heart in a certain phase of its action has been tested, and this effect is in the direction of increased work. The cardiac effects of the drug are certainly worthy of close attention, whether we consider them as applied specifically to the elucidation of the many secrets still remaining in the heart mechanism, practically all possible factors in which are influenced by it more or less independently, or as to a more general significance of the phenomena observed. The principal immediate effects of a 0·5 per cent. solution have been already stated, but attention has been chiefly directed in these experiments to weaker solutions—namely, 0·1 and 0·2 per cent.—which it will be well to consider first in a general way.

On a fresh heart the effects of a 0·1 per cent. solution of nicotine are somewhat as follows: Slowing of the rate sets in usually before the end of the first minute, with or without a previous acceleration; the auricle beat is increased in amplitude, while that of the ventricle is shortened and shows incomplete diastole. This weak solution if dropped on the heart while it is being perfused has very little effect on the rate and causes a very slight tonus or none. It requires a strength of nearly 1 per cent. to cause an appreciable stop when dropped on the Ringer perfused heart, while intermediate solutions of 0·2 or 0·3 per cent. used by dropping generally cause some slowing and increase of auricle beat in like case.

Though the heart becomes inured to the drug in such a way as to recover much of its normal condition under its

[1] Pembrey and Phillips: The Action of Drugs on the Heart, p. 58.
[2] Brodie: Essentials of Experimental Physiology, p. 132.
[3] Stirling: Outlines of Practical Physiology, p. 404.
[4] Barry: THE LANCET, July 1st, 1916, p. 14.
[5] Mines: Jour. of Physiol., 1913, vi., 186.
[6] Ponirovski: Publications of the Veterinary Inst., Kharkov, Jan. 13th, 1916.
[7] All records read from left to right, the upper tracing being that of the auricle, the time of the drum movement being 1 cm. per minute except where otherwise indicated.
[8] Stirling: Loc. cit.
[9] Burridge: Quart. Jour. Med., 9.43; 9.271, 1915, 1916.
[10] In the anatomical sense the connecting muscle between auricle and ventricle in the frog's heart is not a bundle, but it is physiologically equivalent to the mammalian bundle, and the designation is adhered to because it is less confusing than other terms.

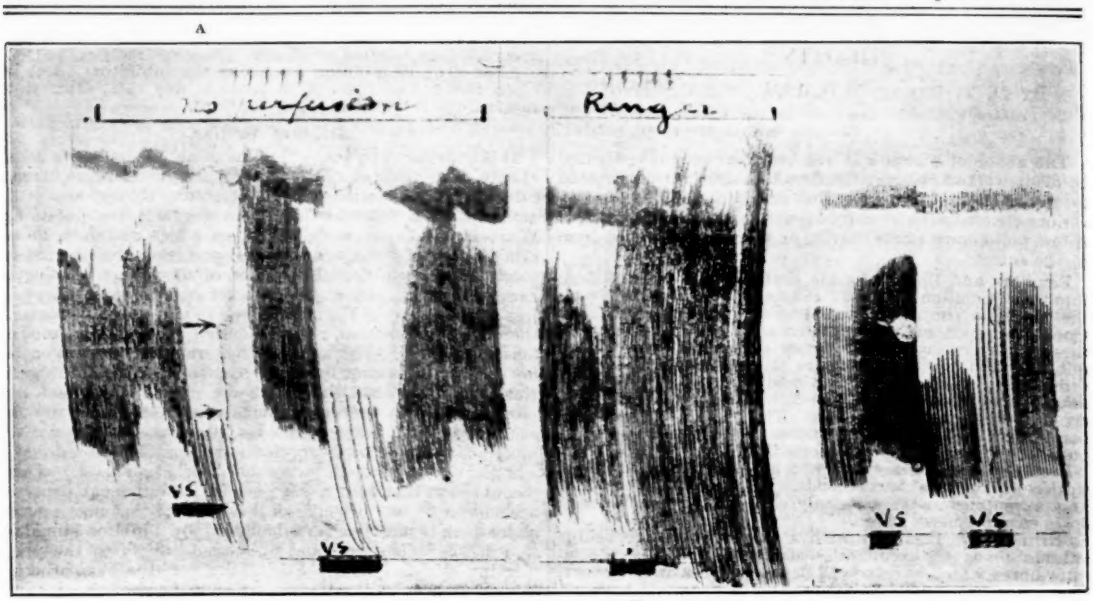


FIG. 1.—Effects of vago-sympathetic stimulation with and without simple perfusion. Slowing and loss of tone (first two signals) without perfusion. Augmentor effect with perfusion (third signal). The last two signals represent the same stimulus in recovery from nicotine.

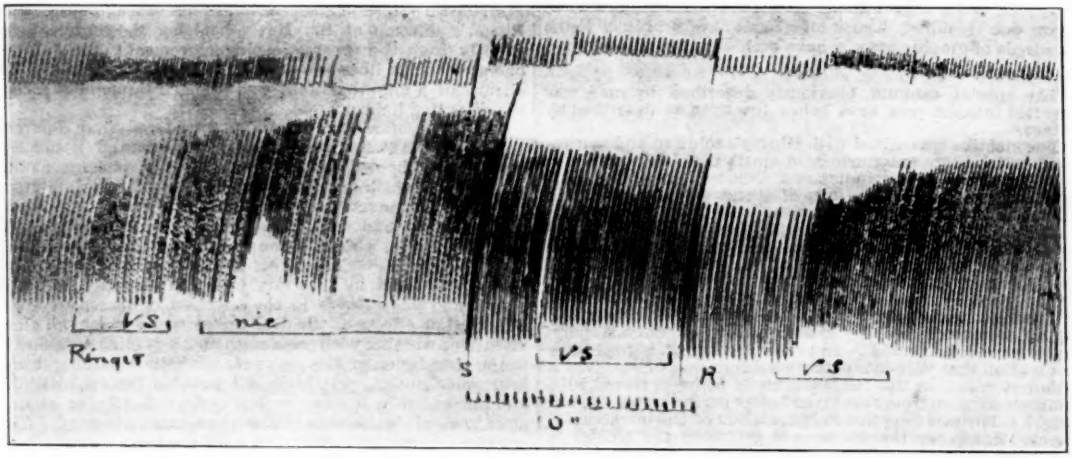


FIG. 2.—Vago-sympathetic stimuli (v.s.) causing acceleration before and after nicotine effect, but not during this.

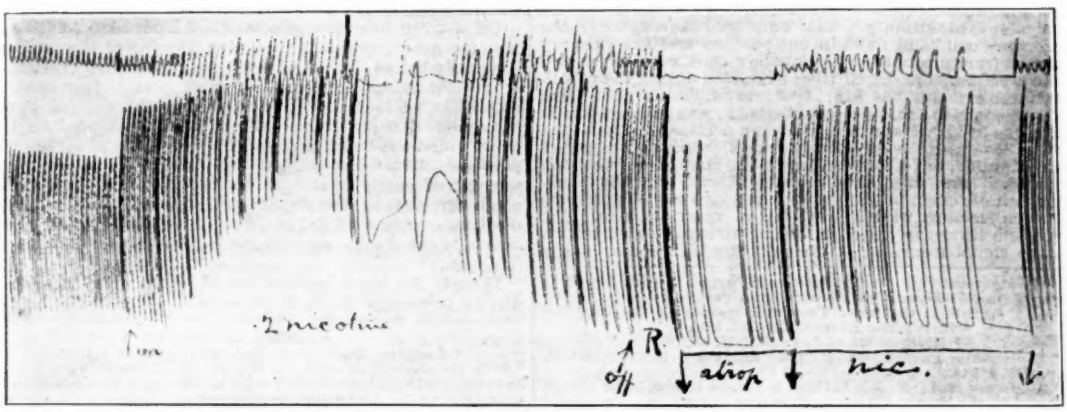


FIG. 3.—Effect of 0·2 per cent. nicotine before and after atropine. Strong atropine perfused about three minutes between arrows. Nicotine action as before, but less tonus.

continued action, it does not always show an improvement on its pre-nicotined state; but it frequently shows for a varying time a larger beat if the nicotine be replaced by Ringer's solution after the first minute, and in this phase it is capable of performing increased work, as referred to above and as dealt with later on.

A 0·2 per cent. solution acts similarly to the above, but with a more pronounced effect. The steps of the action resemble those described for 0·1 per cent. up to a certain point—that is to say, slowing and increased tone of the ventricle—and after a while a complete cessation of beat. (Fig. 3.) The time of onset of this arrest varies from one to four minutes, and its duration with continued nicotine perfusion is from one to three minutes.

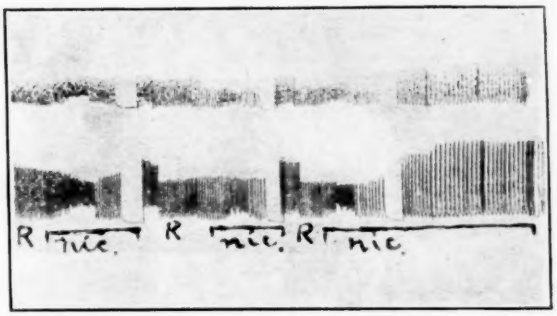


FIG. 4.—Three applications of 0·2 per cent. nicotine each after thorough Ringer washing at R. The accelerators are stimulated in each case. Drum stopped a few minutes at each break.

A. Nerve.

Acceleration before slowing is not invariable, but quite common with a 0·2 per cent. solution, and still more frequent with 0·5 per cent. If acceleration is observed once in a particular heart it occurs again and again in this with the same nicotine solution after a thorough washing out with Ringer's solution, and this consistency is also shown with the other phenomena, in degree, duration, time of onset, &c. (Fig. 4.) Three arrests of the beat by 0·2 nicotine are shown after a preliminary acceleration and slowing. The drum movement was stopped in each case soon after the beat ceased, and this was allowed to recover under the action of the alkaloid. Then a "step" of the recovered contractions to the mark R, where washing out took place. The strong contractions at the end occur under continued nicotine perfusion.

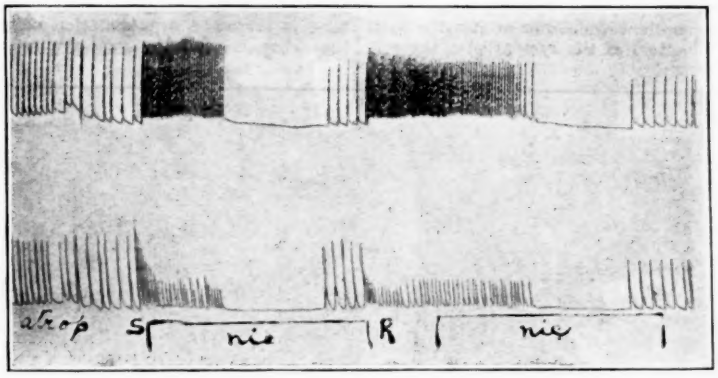


FIG. 5.—Irregular slow beat caused by strong atropine perfusion which ceased at S. Then 0·2 per cent. nicotine stopped heart in two minutes. Same effect later when all atropine washed out (R).

Acceleration by nicotine has been noticed by other observers and has been attributed either to the presence of sympathetic cells in the heart (Cullis and Dixon[11]) or to its action on part of the neurone as well as on cell body (Dale and Laidlaw[12]). A preliminary acceleration by 0·2 per cent. of nicotine is shown by a large proportion of the records. This double action of nicotine is, I think, uniform in all the structures affected by it in the heart.

An endeavour will now be made to show that this is true for the other nerve elements and for muscle. The period of slowing follows that of acceleration, and is occasioned by an excitor effect on the inhibitory mechanism, as stated by many observers. But their explanation of the full continued effect of nicotine on this mechanism is not quite satisfactory in the light of the results about to be referred to.

If the inhibitory effect, slowing and cessation of beat for a time, is due entirely to action on ganglion cells or preganglionic vagus it should be abolished by something which could be relied upon to suppress vitality in these parts, such as atropine. It is said that they are paralysed in the heart by 0·001 mg. of this, and perfusion with atropine solutions representing this dose, administered in the course of a few minutes, was tried as a preliminary to nicotine action, but without effect. Stronger solutions of atropine were next tried, and not until 0·05 per cent. solution was reached was any appreciable antidotal effect noted, beyond lengthening the time of onset of slowing. With this and stronger solutions (yielding about 5 mg. per minute or more) there is a depressing action on muscle. (Fig. 5.) The result in all cases of atropine perfusion was that it never prevented the slowing caused by nicotine, though in strong solution it sometimes diminished the degree of slowing as well as prolonging the time necessary for its onset. This nicotine effect is very like the usual one, and

[11] Cullis and Dixon: Jour. of Physiol., 1911, xlii., 156.

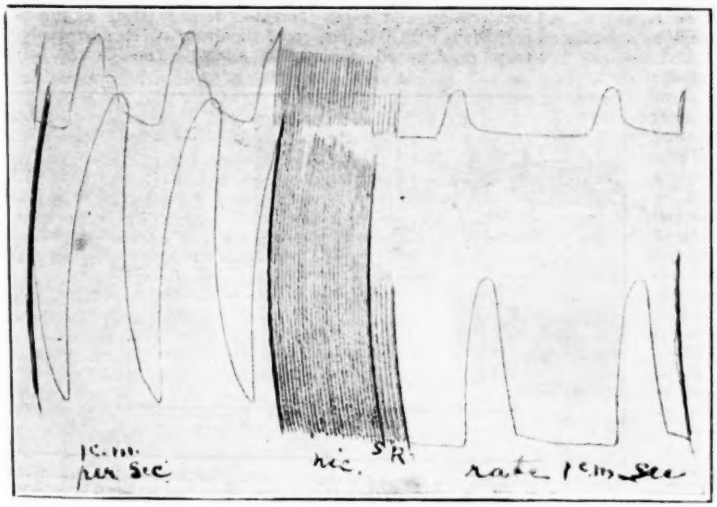


FIG. 6.—Augmentor effect with reversed beat. Normal beat at R.

[12] Dale and Laidlaw: Jour. of Physiol., 1910, xli., 1.

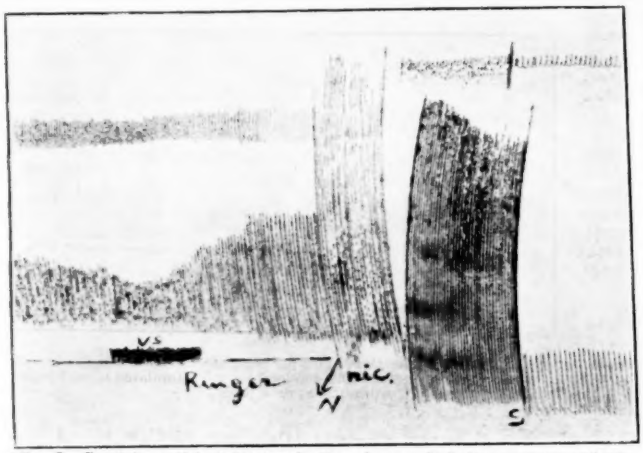


FIG. 7.—Great force of beat due to nicotine when applied after vago-sympathetic stimulation. Perfusion stopped half an hour at S.

the slowing, if we take it that the ganglia have been paralysed, must be brought about through some other channel. If, as has been shown, nicotine excites the post-ganglionic fibres (accelerator) of the sympathetic, there is no reason to suppose that the inhibitory post-ganglionic fibres are not also stimulated by it, whether we regard it as acting on nerve trunk proper or on receptive substance (Langley [13]).

Considering it well to leave no doubt of the failure of atropine to counteract nicotine slowing the former was perfused in still stronger solution, 0·1 per cent., until the muscle showed unmistakable signs of deterioration. These stronger solutions of atropine bring about a marked slowing of the heart and deterioration of the muscle metabolism, which is more marked in the ventricle, and augments this depressing effect of nicotine, but the slowing or stopping action of the latter is practically unaffected. (Figs. 3 and 5.) The latter shows a hypodynamic ventricle where perfusion with both drugs had been alternately performed for about an hour; a 0·2 per cent. nicotine stops the heart in about two minutes. This is again washed out at R, and again nicotine shows the same effect as previously. The depressing action can be intensified in the auricles by running a stout needle through them which establishes a leak, and this determines that the auricle muscle suffers most with low perfusion pressure. Nicotine in this case stops the heart as before, and it resumes with increased pressure (nicotine + Ringer).

The slight counteracting effect of atropine may be due to the fact that nicotine excites both ganglion cells and post-ganglionic fibres, whereas atropine does not affect the latter. The modified nicotine response given in some instances after large doses of atropine may be accounted for by supposing that in strong solution atropine depresses post-ganglionic fibres without completely abolishing irritability in them.

The purely augmentor fibres in the heart are also stimulated by nicotine, and this effect probably outlasts that on the other nerve elements. It is held in check or antagonised during the excited state of the inhibitory fibres, and if the latter condition is curtailed or prevented by turning on Ringer's solution before it is due to come on, the greatly increased force of the beat is seen. (Fig. 6.) It is also sometimes seen after the full effect of the nicotine solution, and may occur with a reversed rhythm—to be referred to directly. The record shows the reduction of the beat to normal after half an hour's delay at S (stationary drum). Augmentation is enhanced and more quickly brought out if sympathetic tone is increased by stimulation beforehand. (Fig. 7.) In this case it was the vago-sympathetic trunk that was stimulated (signal) during Ringer perfusion; this causes acceleration and some increased force. Half a minute's perfusion with 0·2 per cent. nicotine at N now gives a very pronounced augmentor effect. The levers being

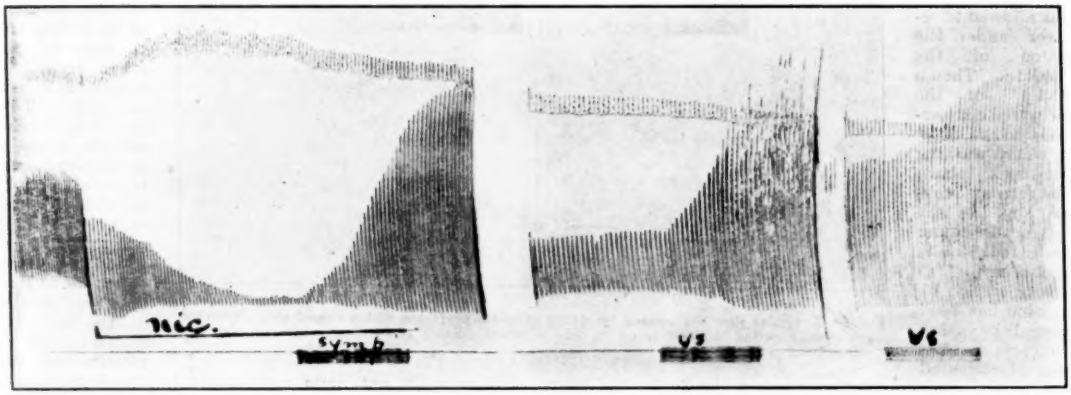


FIG. 8.—Failing ventricle in nicotine action restored by sympathetic stimulation; also strong augmentor effect of vago-sympathetic on ventricle. (Signals 2 and 3.)

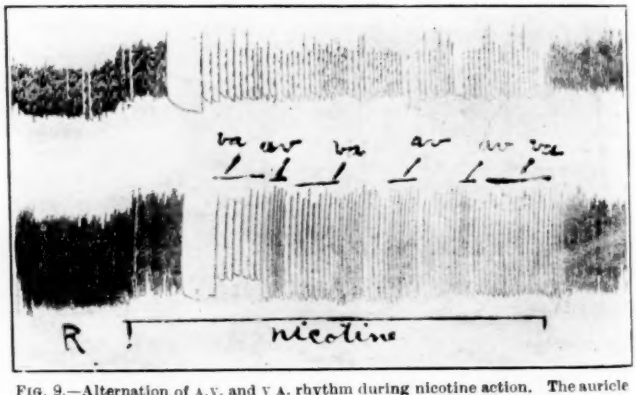


FIG. 9.—Alternation of A.V. and V A. rhythm during nicotine action. The auricle leads in the fast groups and the ventricle in slow portions.

[13] Langley: Jour. of Physiol., 1906, xxxiii., 374.

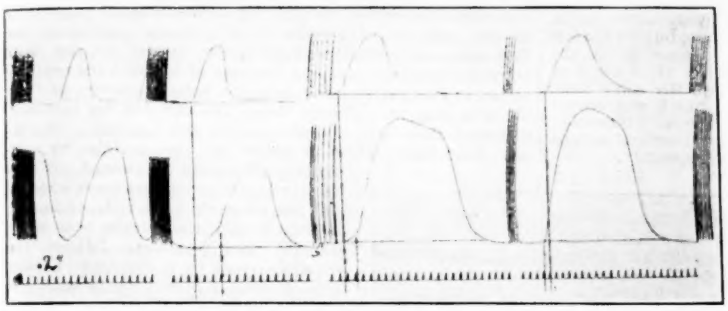


FIG. 10.—Reversal of rhythm by nicotine. The A.V. interval is seen to be shortened before the ventricle takes up the lead in the cycle.

adjusted at the gap in the record, where a portion was cut out, a further step is shown, and finally the return to a low condition without perfusion which had been stopped for about half an hour at the point S. The inhibitory elements are, of course, stimulated by the electric current as well as the augmentor, but we may suppose from the result that the balance of increased tone is with the latter, and the nicotine effect on this is more marked than on the other.

This phase of nicotine action resembles rather the effect of adrenalin in the great size and force of beat than that of digitalis or veratrine. In it the rate may be fast—viz., 60 per minute—or comparatively slow, about 15 to 20 per minute. The accelerators are quickly stimulated (pure acceleration is often the first sign of the drug effect) and recover quickly from succeeding depression; they recover sooner than the inhibitors. (Fig. 1.) The last two signals (Fig. 1) show stimulation of the vago-sympathetic nerve with an interval of two minutes or less in recovery from perfusion with 0·2 per cent. nicotine. Acceleration in the first of these is shown changed to slowing and increased force in the second, but only in the ventricle. During the acceleration response the inhibitor elements were still in the depressed stage, but two minutes later they have recovered sufficiently, not only to prevent an accelerator effect, but to cause some inhibition at least in the ventricle.

The augmentor fibres may remain active when the accelerators seem to be out of action in continued perfusion, and even when the muscle metabolism shows marked signs of deterioration. (Fig. 8.) In the first part of the tracing the ventricle beat is falling off quickly, which is one way of showing its depressed metabolism; other ways in which this is shown are the alternating pulse, half-rhythm, irregularity, &c. The effect of a failure of output by the ventricle is well shown by the auricular tension. The first signal represents stimulation of the sympathetic nerve. A few inches of the tracing which were without interest were cut out at the gap and the vago-sympathetic this time stimulated (second signal) some ten minutes after the sympathetic (the sympathetic stimulus was applied below the vagus ganglion; the vago-sympathetic stimulus to the trunk of the nerve high up). Again we have a pure augmentor effect which is repeated ten minutes later on (third signal). The effect is confined to the ventricle, and points to independent augmentor impulses to that chamber. So in this, after nearly an hour of perfusion with a 0·1 per cent. solution of nicotine, the augmentor fibres to the heart are still active. The period of depression in them supervenes sooner or later, as in the other elements. There may be a temporary depression which is quickly recovered from even under continued action of weak nicotine, or there may be no depression period with a weak solution until after prolonged action. As already shown, there is evidence of accelerator depression by 0·2 per cent. nicotine (Fig. 2), and it is evident that there is no augmentor effect of stimulation at this time either.

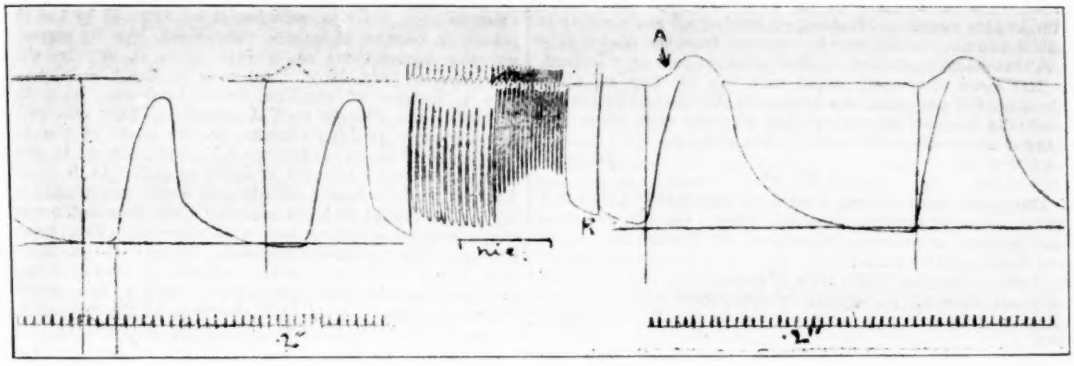


FIG. 11.—Reversed rhythm quickly established in accelerator phase of nicotine. Ringer solution was perfused for a few seconds to reduce tonus at R. A beat begins at arrow.

This greatly increased force of the beat suggested a test of the amount of work done by the heart and how far it might be increased by nicotine stimulation. The method adopted was a very simple one.

A glass tube 40 inches long, of about 4 mm. diameter, was drawn out to a cannula at one end, and this was inserted into the left aorta of the frog, while the right was tied off or clamped. The tube was then placed in a nearly vertical position and the fluid expelled by the ventricle mounted up its interior in a series of intermittent movements according to systoles. Testing the normal heart on Ringer's solution with a supply of 3·5 c.c. per minute, the fluid rose to a height

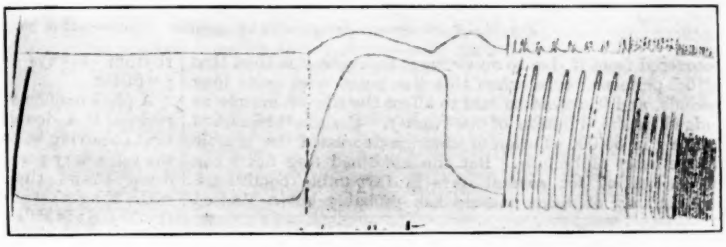


FIG. 12.—Double auricle beat in reversed rhythm. Description in text.

(vertical) of 20 inches on an average, beyond which the heart failed to send it. Lowering the perfusion bottle to relieve the auricular stress and to give the heart a rest did not alter the fluid in the tube, which was kept up by the aortic valve. On further trial no increased work was done, but now, after lowering the perfusion bottle to relieve once more, the Ringer's solution was shut off and 0·2 per cent. of nicotine solution turned on for half a minute with the same feed. As a result of this the heart-beats were much augmented and the fluid was soon driven higher, with greatly increased strokes, until it passed right over the top (vertical height over 30 inches). This result was obtained frequently.

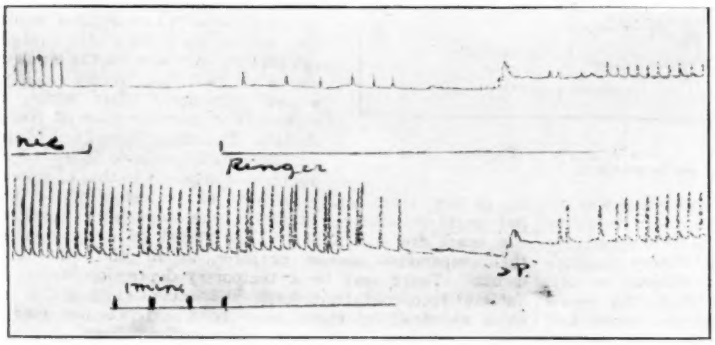


FIG. 13.—Independent ventricle rhythm. Recovering auricle causes extrasystoles. After four of these the independent contractions in ventricle suppressed.

A very high pressure is without ill effect on the heart after this dose of nicotine, as may be seen by the ease with which it deals with an increased feed like that of Ringer plus nicotine. Instead of cutting off the nicotine in half a minute, the clip may be removed from the Ringer tube and this solution allowed to flow with the former. Indeed, it has been frequently noted that the slowing effect of nicotine, 0·2 per cent., can be greatly diminished by raising gradually the perfusion pressure in this way after some half minute even without dilution by Ringer's fluid.

B. *Muscle.*

The great force of beat has to be attributed in part to a direct action of nicotine on muscle fibre. Langley[14] showed that skeletal muscle was stimulated by it when all nerves had degenerated. In this as in nerve it first excites and then depresses, but even in the state of depression, brought about by itself, nicotine is capable of temporary stimulation of muscle. Nicotine depression of muscle, too, is thoroughly recovered from if due to no stronger concentration than that of 0·2 per cent, even when this has acted over quite long periods, and it cannot be said to affect the life of muscle as judged by the duration of its vitality. Carlson[15] remarked that a 1 in 50,000 solution of nicotine depressed the muscle of the heart of limulus. But the nicotined frog heart can go on beating for several days in favourable conditions. Rhythmicity of heart muscle has probably but a limited independence of nerve, and the stock runs down when nerve influence has been long removed.

Generally speaking, ventricular muscle is more susceptible to the influence of nicotine than auricular, and shows the first signs of defective metabolism, as well as the more marked response (tonus and increase of beat) to the exciting action. The auricles and ventricle sometimes recover from nicotine stop at different times, the auricles, for instance, resuming their beat some time before the ventricle. But we can determine a stronger action on the auricle by perforating as before mentioned, so that its muscle and nerves are more affected and the ventricle beats independently. In such a case the auricle beat when resumed nearly always follows the ventricle—that is, a reversed rhythm. This reversal, too, frequently occurs in recovery from nicotine stop without perforation of the auricles, and in the progress of recovery there is often a struggle between the two chambers for the lead. (Fig. 9.) The accelerated patches in the record are those where the rhythm is A.V., and the slower those of the V.A. sequence. At the change from the former to the latter an auricle beat is missed and sometimes two. With reversal, too, the auricle may cease to beat altogether for a time, while the ventricle beats alone. Reversal is more common when nicotine perfusion is kept up than when replaced during the stop by Ringer.

There is no difficulty in detecting the last-mentioned changes with the eye, whether it be directed to the lever points or to the chambers themselves, but by spreading out the contractions on a fast drum it can be shown graphically. (Fig. 10.) Shortening of the A.V. interval is also a feature of nicotine action and can be noticed preceding the change to V.A. rhythm. This change can occur without pushing nicotine to the arrest of the heart beat. At first an ordinary A.V. contraction is shown (Fig. 10) with an interval of 3/5th second. At S nicotine was perfused for half a minute and about one minute later the A.V. interval is 1/5th second. This does not occur in the acceleration phase but with slowing. Two minutes later still the reversed rhythm is shown. It can also be seen in the acceleration stage before any slowing is caused as the ventricle tonus passes off with a few seconds' Ringer perfusion. (Fig. 11.) A return to the normal A.V. rhythm always occurs with a few minutes' Ringer perfusion.

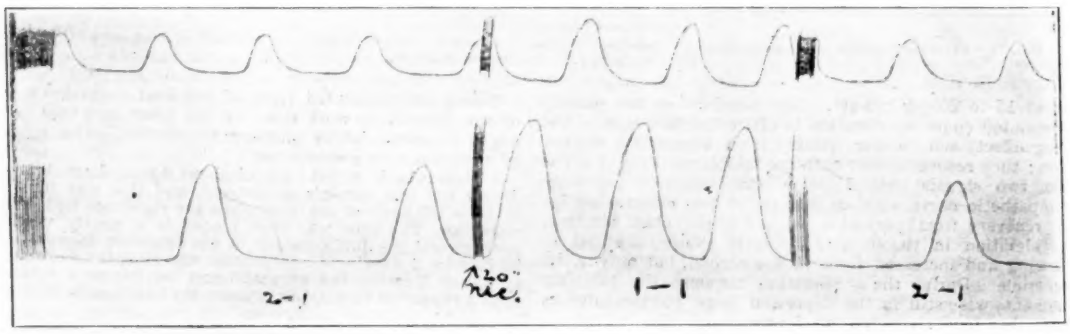


FIG. 14.—Block removed temporarily by nicotine. Central part of nicotine shows a 1:1 rhythm.

A phenomenon which has been frequently observed in this reversal is a double beat in the auricle (Fig. 12), the second beat occurring at the height of ventricular systole and during the refractory period of the latter. The fast movement of drum shows the beat first to be reversed. Perfusion with Ringer's solution for one minute does not alter the rhythm (it is still V.A.), but it changes the appearance of the auricle tracing. Two minutes' perfusion at the next stop

[14] Langley: Loc. cit.
[15] Carlson: Amer. Jour. of Physiol., 1906, xvii., 177.

gives the ordinary rhythm (A.V.). The significance of this double auricle beat is that the first is dependent on ventricular contraction which has been established as leading the cycle by some influence of the drug on its ordinarily subordinate mechanism. The higher mechanism, ordinarily predominant, is now recovering, and the second beat is an indication of this; the stimulus from this second beat falls during the long refractory period of the ventricle and fails to excite it. The condition is interesting from its bearing on de Boer's [16] work, who attributes to this long refractive phase the chief rôle in bringing about halved rhythm with veratrine, &c., while the view of Engelmann [17] and others is that the halved rhythm is caused by lowered conductivity from auricle to ventricle.

As a contrast to this we may examine another state where the ventricle is beating independently of the auricle, the latter being brought to a standstill, as already explained. (Fig. 13.) Here the recovery of the auricle takes place without reversal—that is, independently of the ventricle mechanism, which is not strong enough to determine it. The auricle beats, in this case occurring after the refractory phase of the ventricle, cause extrasystoles in the latter, until it takes up its normal secondary habit of following the auricle, as shown by the last two beats before the interval. The heart then ceased to beat, probably because the perfusion pressure was low; when this was raised at P the ordinary A.V. rhythm was established in a couple of minutes. The last of the extrasystoles is followed by a longer compensatory pause than the others, and during this the auricle assumes command, and this to the extent of stopping the ventricle with it when it ceases to beat. This group of auricle beats is characteristic of recovery when cessation has occurred in either chamber, isolated contractions taking place irregularly before ordinary rhythm is re-established. The last two ventricle beats before the stop are a continuation of the extra series, the automatic contractions being suppressed.

A halved rhythm can be temporarily changed to 1-1 by nicotine in lowered ventricle metabolism (Fig. 14), and this may be interpreted in many ways. The drug may increase the conductivity of the connecting muscle (dromotropic), and thus break down a block as it is generally understood, or it may increase the irritability of the ventricle (bathmotropic or inotropic), though the refractory period with larger beats would tend to increased length. The stimulus from the auricle, too, is stronger because of the stronger contraction.

That the second beat in the auricle may possibly be caused by closure of the electric change accompanying the ventricle contraction has to be considered, though the explanation given is the more likely one.

Reversal of the heart rhythm in the turtle has been caused by Laurens and Gault.[18] Conjoint stimulation of the vagus, which is separate from the sympathetic in the neck, and of the funnel connecting auricle and ventricle led to this V.A. beat. Stimulation of the sympathetic changed this back to the normal rhythm. There was no change of rate, but the force of auricular contraction was less.

In the nicotine reversal in the frog stimulation of the sympathetic seems to be without effect in converting to normal; it was certainly without immediate effect when tried in a few cases. We may suppose that the nicotine stimulation to predominance of the usually dependent mechanism of the ventricle is at least in part due to its stimulating action on ventricle sympathetic elements exceeding that on the auricle, while the inhibitory effect would be more potent in the latter. As already remarked, there is evidence of independence of action of ventricle augmentor elements. (Fig. 8.)

Schlomovitz and Chase [19] tried to abolish the automaticity of the sino-auricular pacemaker in the turtle with nicotine and atropine, but did not succeed, and for this reason they concluded it was independent of nerve. There is no doubt, however, that nicotine causes a reversal of rhythm as here described. It has been seen many times.

As already stated, the A.V. interval is shortened in certain phases of nicotine action. If this interval is due to delayed conductivity of the contraction wave in the intermediate region then nicotine shortens it by increasing the conductivity. It is likely that the drug shortens the latent period of ventricular muscle, but this has not as yet been verified.

[16] De Boer: Quar. Jour Exp. Physiol., x., 4, p. 383.
[17] Engelmann: Arch. für d. ges. Physiol., 1897, lxv., 108.
[18] Laurens and Gault: Proc. Soc. Exp. Biol. Med., 1916, xiii., 182.
[19] Schlomovitz and Chase: Amer. Jour. of Physiol., 1916, xli., 112.

Conclusions.

Nicotine in weak solution, 0·1 and 0·2 per cent., which has been neutralised, perfused through the hearts of frogs gives results which are fairly uniform, though certain variations occur.

The first effect in a majority of instances is pure acceleration of the beat which is usually seen in less than half a minute from the introduction of the drug. This gives way to slowing, a phase in which increased force of the contractions is also seen. When acceleration is not in evidence increased force is usually exhibited alone within the first half a minute, or both may occur together. The stimulation of accelerator fibres is soon followed by depression, and this double action is believed to be true of nicotine on the different elements responding to it.

Slowing of the beat leads to a definite stop lasting one or a few minutes, but this is not common with solutions of less than 0·2 per cent. After a period of quiescence the heart resumes its beat with a rhythm which may be irregular or regular, the amplitude of contraction being usually greater than before. The contractions are now often reversed—viz., apex to base sequence, and this is more common after stronger solutions of nicotine, 0·5 to 1 per cent.

With 0·5 to 1 per cent. solutions cessation of beat occurs sooner than with weaker solutions, and lasts longer. With a solution of less than 1 per cent. it resumes beating spontaneously after arrest, with nicotine perfusion kept up, though this is not always so.

The slowing of the beat and arrest for a while is due to stimulation of the vagus endings. The failure of atropine to counteract this points to stimulation of post-ganglionic fibres. This resembles its effect on the sympathetic side causing acceleration.

The augmentor fibres are also stimulated by nicotine, and the succeeding depression is short-lived or may be much delayed. Evidence is given of their activity in certain stages of nicotine effect, when inhibitor and purely accelerator factors seem to be suppressed. The activity of augmentor fibres to the ventricle seems to be possessed of a certain degree of independence, in consequence of which they may constitute the chief factor in independent ventricular rhythm.

The work done by the heart can be increased by nicotine stimulation. This is in part nervous and in part muscular in origin.

The delay in the passage of the contraction wave from auricles to ventricle is reduced by nicotine, in some instances independently of acceleration, and is frequently seen to lead to a reversed rhythm. The usually subordinate ventricle mechanism is stimulated to predominance in the cycle.

Though all of the phenomena mentioned have been observed many times, the only one which may be said to be unfailing in its appearance is slowing and arrest of the beat in proportion to the strength of nicotine used. Very strong doses of atropine do not abolish this.

Cork.

THE LATE MR. FREDERICK E. FENTON.—Mr. Fenton, who died at his residence, Uxbridge-road, Ealing, on Oct. 16th, aged 64, was born in Chelsea, and received his medical education at St. George's Hospital and in Paris. He qualified in 1878, and later took the Fellowship of the Royal College of Surgeons and the Membership of the Royal College of Physicians of Edinburgh. He commenced practice in Ealing at a time when that place still retained some of the characteristics of a Middlesex village in the neighbourhood of London. By his all-round ability he soon gained for himself a good position professionally and the esteem of his neighbours. He was prominently associated with the Cottage Hospital at Ealing, and later became surgeon to the Western Skin Hospital and to the King Edward Memorial Hospital at Ealing, being later appointed consulting surgeon. Among his other active interests was that of the Volunteer movement, and he served in the Queen Victoria Rifles for 22 years, retiring with the rank of Surgeon Lieutenant-Colonel, with the Volunteer Decoration. A good French scholar, he translated from the French M. Duval's "Artistic Anatomy." He leaves a widow, a daughter, and a son, who is a member of the medical profession.

WAR EMERGENCY FORMULAS:

AN ADDENDUM TO THE BRITISH PHARMACEUTICAL CODEX 1911.

IN this new addendum are contained temporary formulas for preparations which normally contain sugar or glycerine or both. The substitutes are generally either:

(1) Syrupus factitius, consisting of

Tragacanth in powder ...	0·7	Distilled water... ...	to 100·0
Chloroform	0·5		

or (2) Diluted glucose, consisting of

Glucose	90·0	Distilled water	10·0

Preparations formerly containing sugar.—It will be useful to note the directions for preparing some of the more commonly prescribed sugar compounds. Confection of senna contains 45 grammes of glucose in the place of 40 grammes of sugar; confection of sulphur is made with syrup substitute and orange flower water; aromatic elixir is made with diluted glucose and the same applies to elixir of orange; in cod-liver oil emulsion the sugar is merely omitted; in compound mixture of chloroform syrup substitute is used in place of syrup; from guaiacum mixture sugar is omitted; compound powder of almonds contains no sugar; in compound liquorice powder, maize or rice starch is used in the place of sugar; there is no sugar in compound powder of tragacanth; in syrup of hydriodic acid syrup substitute is used, as also in the case of the following syrups: Aromatic, orange, orange flowers, lemon, rhubarb, squill, tolu, urginea, and ginger; in syrup of senna a variation of syrup substitute is used.

Preparations formerly containing glycerine.—Turning to the preparations containing glycerine, there are several points worthy of note. The following is the formula for glycerine of carbolic acid:—

Phenol	5·0	Chloroform	0·5
Tragacanth	0·7	Distilled water ...	to 100·0

This preparation is less viscous and more readily absorbed than that made with glycerine, and therefore the strength has been diminished. The formula for glycerine of tannic acid is as follows:—

Acid tannic	10·0	Alcohol	2·0
Tragacanth	1·2	Distilled water ...	to 100·0
Chloroform	0·5		

Here again the strength has been diminished on account of the more rapid absorption of the new preparation. Glycerine of alum is made with sugar substitute and the strength has been diminished. The formula for glycerine of starch is as follows:—

Potato starch	5·0	Alcohol	2·0
Tragacanth	0·5	Boric acid lotion B.P.C.	95·0

Glycerine of borax is composed of tragacanth, chloroform, and boric acid lotion. In compound glycerine of glycerophosphates distilled water is used instead of glycerine, and the same device has been adopted in the case of compound glycerine of thymol. In glycerine of pepsin the following is the formula:—

Pepsin	10·00	Distilled water	22·50
Hydrochloric acid ...	1·15	Alcohol (20 per cent.) to	100·00

Glycerine is omitted from the following preparations: Liniment of potassium iodide with soap, compound solution of borax, calamine lotion, quinine lotion, liquor pepticus, sulphur lotion, borax and honey, compound bromide mixture, butyl chloral hydrate mixture, compound pepsin mixture, compound spirit of camphor, tincture of kino, tincture of wild cherry, pepsin wine, iodine ointment, and resorcin ointment. In compound tincture of cardamoms, compound tincture of rhubarb, and compound tincture of senna the glycerine is omitted and a larger proportion of alcohol used.

CENTENARIAN.—Mrs. Sarah Gardiner, who lives at Evelyn Villa, Holly Walk, Leamington Spa, is, a correspondent informs us, 105 years of age.

Correspondence.

"Audi alteram partem."

THE USE OF FLAVINE ANTISEPTICS IN WOUNDS.

To the Editor of THE LANCET.

SIR,—The work on the treatment with acriflavine and proflavine of recently inflicted war wounds, by Captain H. Drummond and Major J. W. McNee, along with Captain L. Colledge, Captain A. F. Sladden, Captain J. E. McCartney, and Lieutenant R. T. Worthington, under the auspices of Surgeon-General Sir Anthony Bowlby constitutes a valuable contribution on the employment of flavine antiseptics under conditions of trial not hitherto recorded. When our original communications were published flavine antiseptics had been extensively tested in this country, but, necessarily, the type of early case investigated by Drummond and McNee was not available here, and while the "prophylactic" use of flavine had been undertaken by one of us[2] in hospital practice, and by Thornton, along with Leeming Walker[3] in the outpatient department, recent injuries of the extent and gravity of those met with in the war zone had not been treated. The results obtained here, however, were of so encouraging a nature as to justify us in the statement that "it is not too much to hope that even in severe cases of injury, with extensive and highly contaminated wounds, the onset of the phenomena of sepsis and anaerobe infection may be aborted to a great extent, provided that energetic treatment is begun at the earliest possible moment." Drummond and McNee have attained a degree of success in this direction by the use of flavine, which, as compared with other methods in present use, seems to leave little to be desired by the most exacting. We are aware that it may be claimed that nothing more has been achieved than was possible by means of the Listerian technique, employing carbolic acid; but it is notorious that the world of surgery as a whole had not realised the Listerian ideal in preventing septic manifestations in contaminated wounds with a degree of constancy sufficiently high to render the finding of further antiseptics a work of supererogation. The results of Drummond and McNee have, of course, been obtained by radical preliminary surgical treatment, the necessity for which in all cases has been repeatedly emphasised by us when suggesting the use of flavine; for it is inconceivable that any measure, short of removal, will effectually overcome a focus of infection situated in a mass of necrotic tissue. It is highly satisfactory to note the conclusion arrived at by Drummond and McNee, that "the primary dressing (i.e., gauze packing soaked in 1 : 1000 flavine solution) need not be changed for two or three days and is then easily and painlessly removed." As these observers remark, an important point is that "this may be of great advantage during severe fighting where rapid evacuation of wounded from front to base is required without unnecessary dressing of the wounds." It seems that the simplicity and effectiveness of the procedure must be ascribed to the remarkable property of the flavine antiseptics whereby they continue to act in the serous wound-exudate, thus obviating necessity for the immediate installation of the so-called Carrel's tubes, and the maintenance of what Dakin and his American collaborators[4] have recently characterised as a "complicated hydraulic system." It need scarcely be emphasised that the gain to the comfort of the patient at this serious stage, in addition to the value in medical organisation, is immense, considering that, after the primary dressing, his wound does not require to be disturbed for so considerable an interval. It is most striking that in open wounds treated in the pre-suppurative stage, where the course of events can be observed, on the third day after infliction, when the primary flavine dressing is removed, "all signs of inflammation are wanting and there is no pain, redness, swelling, or induration in the tissues around. The secretion from the wound is

[1] THE LANCET, Oct. 27th and Nov. 3rd.
[2] Ligat.: Brit. Med. Jour., Jan. 20th, 1917.
[3] Browning, Gulbransen, Kennaway, and Thornton: Ibid.
[4] Dakin, Lee, Sweet, Hendrix, and Le Conte: Jour. Amer. Med. Assoc., vol. lxix., p. 27, 1917; see also Sweet, Ibid., p. 1076.

minimal in amount and suppuration is absent." Thus, it appears that a simple flavine packing, subsequent to necessary operative procedure, has enabled the dangerous period of the first few days to be safely passed without the occurrence of gas gangrene or spreading pyogenic invasion of the tissues. As regards the subsequent course of events in such cases, two most interesting observations have been recorded by Drummond and McNee—first, "that in the great majority of the wounds no sterilisation in the bacteriological sense was brought about by the application of flavine. The wounds tended to pass through, as regards their bacterial flora, the stages now well recognised in wounds of this war." In his comment on this point Sir Anthony Bowlby remarks: "In spite of the presence of bacteria, there is a notable absence of inflammation and of septic infections"; and it is most important to notice that not merely are the local phenomena absent, but also the severe constitutional evidences of septic infection are awanting. Thus, it is not merely a question of flavine having masked the action of the organisms in the wound, but, judging from the results, *the organisms have actually been deprived of their virulence and pathogenic properties by the presence of flavine.* As Drummond and McNee remark, there exists "the fundamental difference between what may be termed 'surgically sterile' as distinct from 'bacteriologically sterile' wounds. Complete bacteriological sterility was rarely obtained, yet the patients were obviously doing well, and the wounds showed no signs of local or spreading inflammation. In several instances secondary suture was adopted with complete success, while numbers of organisms were still recognisable in the field of the microscope. Cultures, moreover, showed that these organisms were still viable." It seems to us that this quotation illustrates the valuable results likely to be obtained from the balanced collaboration of the clinic and the laboratory. Implicit reliance on precedent would here have led to erroneous conclusions as to the suitability of such wounds for suture, and it is likely that they would have been condemned on the basis of "bacterial charts." As we had previously remarked,[5] "there is no proof that the standards established in connexion with hypochlorite solutions will apply precisely to wounds treated with other antiseptics. Information on this point in connexion with flavine compounds and other substances must be interpreted without bias derived from a knowledge of the significance of the findings under the particular conditions studied by Carrel." Major Carslaw's[6] conclusion, in an independent series of cases, is in complete agreement with Drummond and McNee on this question of the lack of significance attaching to the exclusively bacteriological criterion of progress in the wounds. As regards the existence of certain types of *B. coli* which are relatively resistant to flavine, we have been able to verify this fact; but it must be noted that all coliform types do not present this resistance, and the common *B. coli* is not highly resistant. The second point is that open wounds under continuous treatment with flavine from the presuppurative stage onward, "tend to assume a stagnant condition, during which the processes of repair are almost in abeyance." We have, of course, never had an opportunity of following large open wounds treated in this manner from the earliest stage and we accept without reserve these highly important observations of Drummond and McNee. An examination of their histological data shows that when flavine solution is applied to *freshly exposed* tissues there is very little in the nature of a reparative tissue-reaction; the surface of the wound becomes covered with a fibrinous membrane and the condition remains practically *in statu quo*; at the same time, it must be again emphasised that, in spite of this, the net result of the flavine treatment is to prevent any tendency to the development of the phenomena of local or general infection. The "narrow zone" of necrosed muscle fibre in the floor of the wound can scarcely be attributed to a deleterious action of flavine on the tissues, since the same appearance is met with in a recent "aseptic" operative surgical incision closed by sutures, nor do Drummond and McNee attribute the microscopic necrosis to the flavine. Their histological picture seems to be a most satisfactory confirmation of our original statement as to the harmlessness of flavine when applied to the vegetative tissues. As to the inhibition of reparative reaction, we have never had the chance of making observations under the conditions now investigated, but we heartily endorse the conclusion that, in these circumstances, "it is obviously improper treatment to continue the application of flavine until such a stage is reached." As regards later treatment in those cases where suture is impracticable, as in large superficial wounds, we would suggest that the possibilities of effective intervention are not exhausted by the application of eusol, which, however, owing to the solvent action of hypochlorites, affords a useful means of removing the fibrinous membrane. The use of brilliant green at this stage would be most interesting; observations have suggested that it causes exuberant growth of well-vascularised granulation tissue and that the effect can be regulated according to the concentration employed; this would be a most valuable condition for further trial.

A further point to which we would especially draw attention is the misinterpretation which is likely to be attached to Drummond and McNee's conclusion that "flavine cannot be classed as a success in the treatment of the *later* stages of war wounds"; this unqualified statement, apart from the context, is liable to cause grave misunderstanding. It is obvious that *the authors are here referring solely to their experience with cases treated continuously from the pre-suppurative stage onward with flavine.* The majority of wounds which reach this country have not been so treated, and it is probably the rule for war wounds as they reach home hospitals to be in a state of suppuration. Now the majority of the original tests were made in such suppurating cases, and the opinion regarding the highly beneficial action of flavine as a therapeutic antiseptic was arrived at by one of us (Ligat) owing to observations under such conditions. In contrast to Drummond and McNee's observations on cases treated *ab initio* with flavine, it is noteworthy that where flavine treatment was *begun in the later stages* the formation of pink healthy granulation tissue and the ingrowth of epithelium appeared much accelerated—a point which is confirmed by Carslaw's[6] observations on wounds treated with flavine after the onset of suppuration. This happened concomitantly with the diminution of suppuration, which had often persisted for long periods in spite of other accepted forms of treatment—brilliant green led to similar results, although it appeared not quite so effective when applied in similar fashion. Carslaw has also drawn attention to the effect of flavine in putting an end to suppuration in cases which had long failed to respond to a variety of therapeutic agencies.

With regard to the question of mode of application, it is to be noted that intimate contact of the antiseptic with the tissues must be secured; no known antiseptic will act at a distance, and also the antiseptic present must be available; hence gauze soaking with flavine solution should be used for packing. The latter caution has been added because it has come to our notice that some surgeons have considered that they were applying flavine treatment when they introduced into the wound gauze wrung as tightly as possible from the solution; no doubt this was a beneficial procedure in the case of the harmful, older antiseptics, but it is not an effective method of applying flavine! We would also draw attention to the method of efficient application by a tube with valved outlet devised by Mr. T. H. Kellock.[7] This matter of the necessity for intimate contact of the antiseptic with the infected tissue cannot be over-emphasised; contact is comparatively easily attained in the case of open surfaces and is difficult to secure in deep wounds—e.g., compound fractures, and in consequence of this beneficial effects may appear less marked in such cases. It would be ignorance or disregard of the significance of this point, however, which would prompt a statement to the effect that a substance acted well on surface wounds, but was incapable of acting in deep ones; this would mean nothing more than that the mechanical procedures were defective in securing contact in the depths.

The observations as to the promotion of healing brought about by flavine in suppurating wounds, in which granulation tissue is already present, have been confirmed by Carslaw[6] and others and do not stand in any contradiction to those of Drummond and McNee. Obviously the formation of granulations from the vegetative tissues is one process and the active proliferation of granulation tissue which has once

[5] Browning, Gulbransen, and Thornton: Brit. Med. Jour., July 21st, 1917.

[6] Carslaw: R.A.M.C. Jour., vol. xix., p. 488, 1917.

[7] Kellock: THE LANCET, 1917, ii., p. 348.

been formed is another; as to epithelial ingrowth, it is notably influenced by the relationships of the granulation tissue. As regards the formation of the pellicle in wounds coming under flavine treatment when already in the suppurating stage, some observers appear to be more familiar with this phenomenon than others and the differences in method of use which determine varying results require further elucidation.

So far as our own observations are concerned and in the light of Drummond and McNee's and Carslaw's work, the importance of which rests both on the valuable therapeutic results obtained and also on the evidence of scientific attitude in seeking an appropriate clinical application for laboratory results, we feel that what we had anticipated for flavine antiseptics, and perhaps even more, is likely to be realised. It has not been suggested that from start to finish of any infected wound flavine ought to be applied continuously, and Drummond and McNee's work on wounds in the presuppurative stage, as well as Carslaw's observations on those already suppurating, afford a clear proof of the suggestion which we made, that the most valuable effects of flavine antiseptics are to be obtained in the first few days of application, and that later on, after serious infective processes have been prevented or overcome, it is advisable to intermit their use or to substitute some other compound—thus, to prevent the appearance of sepsis and to control it when established are results which flavine antiseptics undoubtedly have shown themselves capable of accomplishing, with a very great measure of success, by comparatively simple procedures. Now that these important general points have been demonstrated by several independent series of observers, and that the broad lines of suitable application have been established, the way seems clear for further detailed work, which will also lead to the elaboration of methods for advantageously utilising the properties of these substances in other departments of surgery.

In conclusion, it may be added that in view of the preference shown by many surgeons for the use of antiseptics in the form of oily pastes, a procedure the rationale of which—apart perhaps from its "depôt" effect and its use in long narrow sinuses—is probably not yet fully understood, we hope that proflavine will soon be available in this form, e.g., as a fatty acid compound (oleate, &c.) which will be dissolved in oils and paraffins, or homogeneously mixed with these substances.

We are, Sir, yours faithfully,

C. H. BROWNING.
DAVID LIGAT

The Middlesex Hospital, Nov. 6th, 1917.

SPIRAL FIELDS OF VISION IN HYSTERIA, MALINGERING, AND NEURASTHENIA.

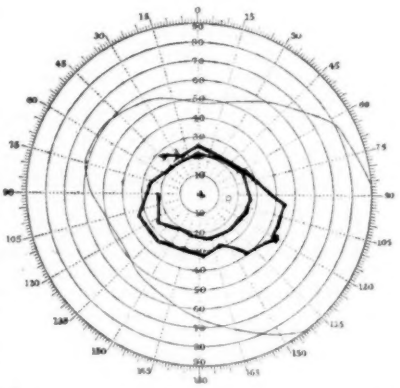
To the Editor of THE LANCET.

SIR,—In your issue of Oct. 20th Mr. W. M. Beaumont upholds the opinion expressed in Jones and Llewellyn's "Malingering, or the Simulation of Disease," that spiral fields of vision are characteristic of neurasthenia, in opposition to the view usually taught and quoted in your review of their book (THE LANCET, August 4th) that spiral fields are characteristic of hysteria. I am convinced that neither view is strictly accurate, as both narrow and spiral fields of vision are invariably the result of unconscious suggestion on the part of the observer. They are often produced in patients with hysterical symptoms, because, as Mr. Beaumont points out, such patients are generally abnormally suggestible, and they may be produced in neurasthenic patients, because they are abnormally easily fatigued and often abnormally suggestible in consequence, thus explaining the frequent association of hysterical symptoms with neurasthenia. Conclusive evidence of this view is brought forward by Morax, a distinguished French ophthalmologist, and formerly an assistant of Charcot, who was the first to describe these so-called ocular stigmata of hysteria. A true disciple of his great master, he continued for several years to find a narrow or spiral field of vision in all the hysterical cases he saw. But over 20 years ago he became a convert to Babinski's view that all the so-called hysterical stigmata are due to suggestion by the observer, and from that day he has not seen a single case of a narrowed or spiral field of vision. Babinski, who, as chef de clinique, had watched the development of Charcot's views on hysteria, soon felt himself forced to reject them, as he never found the so-called stigmata in any of a series of 100 consecutive cases of hysteria, which he examined in great detail by methods which excluded the possibility of suggestion. Morax adopted new methods to replace the perimeter, which it is practically impossible to use without at the same time suggesting a narrow field of vision, although, of course, the suggestion only takes effect in abnormally suggestible individuals.

In a small way my own experience has been identical with that of Babinski and Morax. I was in charge of the Neurological Department at Guy's Hospital for a year before I visited Babinski's clinique at La Pitié, and a week rarely passed in which I did not demonstrate one or more hysterical cases in which I had found hemi-anæsthesia and a narrow or spiral field of vision. In the nine years which have passed since then I have seen hysterical hemi-anæsthesia only once and I have never seen a narrow or spiral field of vision in a patient in whom these symptoms had not been looked for before he came to me, and my experience has not altered during the past 15 months, in which I have had several hundred soldiers with hysterical symptoms under my care.

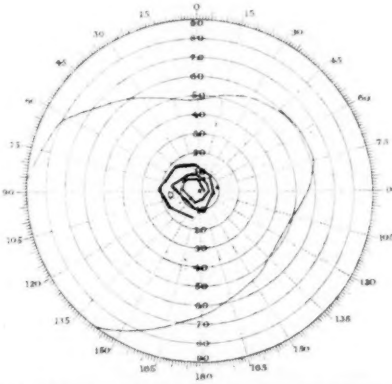
I recently examined 17 healthy medical students who had not yet been in the wards or read any medicine, after asking them to pretend to the best of their ability that they were paralysed in the right arm and leg. On being pressed whether they complained of anything besides paralysis not one mentioned any disturbance of vision, but in answer to a leading question four said they saw less well in the right eye than in the left. Each of the four stated that it was a general deficiency of vision, and said nothing to indicate that he meant a narrow field of vision. Their fields were then examined by the apparently rough finger method, which has, however, the great advantage of suggesting nothing, and no abnormality was found. They were then examined with the perimeter in the ordinary way: in each case a typical narrow field of vision was found in the right eye and in one case in the left, but to a much less degree. In the only two cases in which it occurred to

FIG. 1.



Spiral contraction of field of vision in a case of admitted malingering.

FIG. 2.



Spiral contraction of field of vision in a case of hysterical fit without visual symptoms, in which the finger method, used before the perimeter, showed a normal field.

me to continue the investigation after the first field had been marked out a spiral was obtained (Fig. 1) which was identical with that supposed to be characteristic of hysteria (Fig. 2). I expect that the reason why a spiral field of vision, which is the natural result of continued suggestion, has not been found in a larger proportion of hysterical cases showing a narrow field of vision is simply because it has not been looked for, the examiner being content when he has marked the limit of vision a single time in each direction.

Captain J. L. M. Symns and I have found in several cases of hysteria that an outward spiral was always obtained instead of an inward one if the white disc of the perimeter was moved outwards instead of inwards, as is commonly done. This proves conclusively that the ordinary inward spiral is the result of suggestion and not of fatigue.

In malingering some symptoms are produced voluntarily by the individual on his own initiative and others are produced voluntarily after being prompted by suggestions made unconsciously by the observer. The same two processes occur in hysteria, with the difference that they are involuntary, the symptoms being produced subconsciously, some by auto-suggestion and others by suggestions made by the observer. It is thus quite impossible to diagnose hysteria from malingering by a study of the symptoms alone.

I am, Sir, yours faithfully,

Netley, Oct. 21st, 1917. ARTHUR F. HURST.

THE FUTURE OF THE POOR-LAW.

To the Editor of THE LANCET.

SIR,—It is time for those who wish to continue as Poor-law medical officers to wake up. There is a proposition which many are wanting to see acted on—viz., that the Poor-law service should become part of, and merged into, the present and future general insurance scheme. The majority (about 2 to 1) of the members of the Poor-law Medical Officers' Association do disapprove of any alteration. It would help if all Poor-law medical officers would send me each their opinion and wish in as few decisive words as possible. I could then tabulate them and find the wish of the majority and make the conclusion known in THE LANCET and *British Medical Journal*.

There is a promise of compensation for vested interests if lost by change of Act of Parliament, but the compensation is never equal to the office and money lost. It may be a compensation, but not an absolute *quid pro quo*. It is not right that those who have no personal interests should decide for those whose actual living and other details of work centre round a Poor-law appointment. It is easy to look down from a higher perch and wish to brush special departmental appointments into the general hubbub. This is just what a State service commandant would like to do. I say again that the future of the Poor-law will be influenced by the amount of resistance offered by its medical and civil officers.

I am, Sir, yours faithfully,

A. WITHERS GREEN,
Honorary Secretary, Poor-law Medical Officers' Association.

Wardrobe-place, E.C. 4, Nov. 2nd, 1917.

INSANE SAILORS AND SOLDIERS.

To the Editor of THE LANCET.

SIR,—Dr. J. F. Gemmel writes with feeling on this subject in your issue of Oct. 20th. I myself have an intense admiration and deep sympathy for our insane sailors and soldiers. So much so that when the Board of Control circularised asylum committees I advised our committee to suggest just such a project as Dr. Gemmel's. The Board of Control replied that such a project was not feasible for two reasons (if I remember correctly). The first was that the mental invalids would be out of reach of their friends, and the second that the numbers affected would be too great. I have always found the Board deeply interested in the welfare of the insane.

The points for consideration seem to me to be as follows:—1. To erect an asylum for these so-called "service patients" is to erect a monument to them. The public would call it the "soldiers' asylum." The stigma would remain and be magnified. The same result would follow if we kept an already-erected asylum for them. 2. Removal from War Office influence, from all reminders of war, would be beneficial. This can be better done as the Board of Control suggests. 3. Documentary evidence, or the want of it, will not make these patients either more or less insane. And certification is protection. Certified patients are protected by the Board of Control. 4. From the point of view of the patients' friends the patients are best in the nearest asylum to them (and this can always be arranged under existing circumstances), and in the nearest cemetery after death. 5. Amongst my cases those patients in whom sufficient intelligence remains have preferred to go near their friends. 6. The term pauper is a misnomer. Many, I should say the majority of patients, in so-called "pauper asylums" are not paupers. Furthermore, most of them come from the same class as the majority of our sailors and soldiers. These will not feel their position as patients but merely as *insane* patients. 7. The allowance of 3*s*. 9*d*. above the maintenance rate is not all: 2*s*. 6*d*. is allowed for extra comforts and should be made use of. Perhaps even this is not enough, but no doubt time will tell and more may be granted.

I consider that *every* patient who has been in the Army or Navy honestly should be classed as a "Service patient." They did their best and broke down. All honour to them! Much can be done for them. Where there are many special wards can be allocated to them. Special privileges can be granted to them. Special kindness can be shown to them. If the letter of my old colleague Dr. Gemmel encourages other superintendents to do their very best for insane sailors and soldiers it will not have been written in vain.

I am, Sir, yours faithfully,

W. J. A. ERSKINE.

County Asylum, Newport, I.W., Nov. 2nd, 1917.

THE VESTIBULAR TESTS AND FUNCTIONAL DEAFNESS.

To the Editor of THE LANCET.

SIR,—I think that if Dr. P. McBride were to carry out the vestibular tests regularly in cases of perceptive deafness their scepticism as to their general usefulness as aids in the diagnosis of functional deafness might become modified. It is now about five years since I first drew attention to the interesting and still unexplained fact that the vestibular sense-organ seems to become impaired in harmony with the degree of severity of the cochlear disease in cases showing perceptive deafness due to organic disease. This phenomenon appears, as Dr. McBride says, even in cases of noise-deafness. On the other hand, I have shown, and I believe that the observation has been generally confirmed, that in functional nerve-deafness, whether due to hysteria or neurasthenia, the vestibular reactions are as lively as, or even more lively than, the normal.

To these broad general statements there are, no doubt, exceptions to be made, and if any of your correspondents are interested in the subject I refer them to the Proceedings of the Otological Section of the Royal Society of Medicine, and more particularly to the discussion on nystagmus (jointly with the Ophthalmological and Neurological Sections), where I had an opportunity of expressing views on the subject which subsequent experience has not materially modified.

I am, Sir, yours faithfully,

Nov. 6th, 1917. DAN MCKENZIE.

References.—Proceeds. Roy. Soc. Med., Otolog. Sect., vol. iii., p. 74, vol. v., p. 18; and Joint Discussion on Nystagmus, Feb. 26th, 1914.

THE SOURCE OF SPIROCHÆTES IN URINE.

To the Editor of THE LANCET.

SIR,—As one among others who have recently been engaged with the investigation of trench fever, I wish to make one or two criticisms of the paper by Captain A. T. Nankivell and Captain C. E. Sundell in your columns, containing their observations of spirochætes in the urine in cases of this disease. In the first place I should like to ask them whether in any of their cases they have ever found spirochætes of the type which they describe in a specimen of urine collected by catheter. Again I notice that in only one of their positive cases was the smegma examined for spirochætes, none being found. I have not seen, nor have I met anyone who has seen, this type of spirochæte in a catheter specimen of urine. On the other hand, in a case of my own—a recruit who

had never been in France before and was admitted to hospital with bronchitis a week after landing in this country, whose urine was examined as a control—numerous spirochætes were found in a specimen collected in the ordinary way after cleansing the glans penis with antiseptic lotion, no other organisms being found on the slide. In a catheter specimen taken at the same time careful search revealed no spirochætes, but in smears made from the prepuce and meatus urethræ many spirochætes of the type under discussion were seen, together with other organisms.

If Captain Nankivell and Captain Sundell are continuing their researches, surely it would be justifiable for them to catheterise a series of "positive" cases, as by this means only can they establish their assumption that the spirochætes they have found are present in the bladder and are not due to accidental contamination.

I am, Sir, yours faithfully,

C. P. SYMONDS, M.R.C.P. Lond.,
Temporary Captain, R.A.M.C.

Nov. 7th, 1917.

TRAUMATIC RUPTURE OF THE HEART.

To the Editor of THE LANCET.

SIR,—In your issue of Oct. 13th is published a case of traumatic rupture of the heart, and as this injury does not appear to be of great frequency perhaps I might be allowed to mention the following case. At the end of last year I was called upon to perform a post-mortem examination of a man who had been knocked down by a taxi. There were several abrasions on the front of the chest, but no wounds. On the left side the third, fourth, fifth, sixth, and seventh ribs were fractured, about 5 inches from the sternum. The pericardium was torn at the apex and was filled with blood. There was a tear in the apex of the left ventricle, perforating the entire thickness of the heart wall and had evidently been caused by the broken end of one of the fractured ribs penetrating the pericardium and myocardium.

I am, Sir, yours faithfully,

J. F. O'GRADY,
Senior House Surgeon, Ancoats Hospital, Manchester.

Oct. 31st, 1917.

DIATHERMY.

To the Editor of THE LANCET.

SIR,—My attention has been called to Dr. W. J. Turrell's letter regarding my note on diathermy in THE LANCET of Oct. 20th, and I much regret that by an oversight I did not refer to Dr. Turrell's valuable paper on the subject read before the Royal Society of Medicine and published in the Proceedings of the society in March, 1916. The great value of this paper is generally appreciated by all interested in electro-therapeutics, and his later work has extended to a considerable degree the field of usefulness of this method of employing diathermy. I hope Dr. Turrell will accept my apologies for this omission, which I can assure him was not intentional.

I am, Sir, yours faithfully,

L. W. BATHURST.

Harley-street, W., Nov. 8th, 1917.

THE Grainger testimonial prize of 30 guineas at St. Thomas's Hospital, which is given for a series of specimens illustrative of recent anatomical and physiological research, has been awarded to Mr. R. S. Foss.

LITERARY INTELLIGENCE.—Messrs. Williams and Norgate have in the press a work by Dr. Mary Scharlieb, entitled "How to Enlighten Our Children: a Book for Parents," which deals in simple fashion with the problem of what should be said by parents to their children with regard to sex. The same firm announces in "The Making of the Future" Series, a volume by Professor H. J. Fleure, entitled "Human Geography in Western Europe," and concerned with race distribution and the influence of climate and environment in the evolution of man.

POOR-LAW GUARDIANS IN IRELAND.—Friction continues in Ireland owing to the refusal of the Local Government Board of Ireland to sanction the appointment of any medical officer of military age to Poor-law unions while Ireland is exempt from conscription. The low salary of the Poor-law doctors has led to the actual or threatened resignations of these officers, as the result of the refusal of their boards of guardians to give them adequate salaries, and the Irish Medical Committee has called upon the Local Government Board to remedy the position.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Lieut.-Col. C. R. A. Pye, D.S.O., Australian Infantry, was educated at Sydney University Medical School, and qualified. He afterwards studied in England and returned to Australia on the outbreak of war, and elected to remain a combatant officer, having previously attained to the rank of Captain in the Australian Infantry. He was awarded the D.S.O. in May this year for conspicuous gallantry and initiative when in charge of the whole of the front line held by his battalion.

Capt. J. B. Randall, R.A.M.C., attached Royal Field Artillery, received his medical education at St. Bartholomew's Hospital, London, and qualified in 1914. He held an appointment at St George's Hospital, London.

Capt. R. A. Ireland, Canadian A.M.C.

Died of Wounds.

Capt. G. E. Chissell, R.A.M.C., was a student at Middlesex Hospital, and qualified in 1916, joining up shortly afterwards.

Died.

Lieut.-Col. W. Graham, R.A.M.C., was educated at Belfast, London, and Paris, and qualified in 1882. At the time of his death, the result of an accident, he was in charge of the Belfast War Hospital, and was Medical Superintendent of the Purdysburn Asylum, Belfast. He was the author of several articles on lunacy and allied subjects in medical literature.

Capt. H. L. Heslop, R.A.M.C., attached Durham Light Infantry, qualified at Durham in 1903. He held appointments at the Children's Hospital, Sunderland, and at the Tynemouth Jubilee Infirmary, and was in practice at Sunderland previously to joining the R.A.M.C.

Previously reported Wounded, now reported Died of Wounds.

Capt. K. A. MacCuish, Canadian A.M.C.

Wounded.

Capt. M. A. Power, R.A.M.C.
Lieut. D. W. Anderson, R.A.M.C., attached Norfolk Regt.
Capt. A. E. Huxtable, R.A.M.C.
Capt. W. B. Jepson, R.A.M.C., attached Devon Regt.
Capt. D. MacNair, R.A.M.C., attached Sherwood Foresters.
Lieut. W. H. Orton, R.A.M.C.
Capt. J. Gaff, R.A.M.C.
Lieut. J. A. C. Greene, M.C., R.A.M.C., attd. West Yorks Regt.
Capt. J. Morris, M.C., R.A.M.C., attached Cheshire Regt.
Capt. K. H. Stokes, R.A.M.C., attached Black Watch.
Surg. J. J. Keatley, R.N.
Capt. T. J. Kelly, R.A.M.C.
Capt. C. Wynne, R.A.M.C., attached Royal Field Artillery.
Capt. H. S. Moore, R.A.M.C.
Major N. E. Kirkwood, M.C., Australian A.M.C.
Major J. R. Muirhead, Australian A.M.C.
Capt. J. H. Fletcher, D.S.O., M.C., R.A.M.C.
Capt. J. Dunbar, R.A.M.C.
Capt. J. M. Forsyth, M.C., R.A.M.C., attached Chesire Regt.
Capt. F. P. Jocelyne, M.C., R.A.M.C.
Capt. M. P. Power, R.A.M.C., attached Devon Regiment.
Capt. A. J. Howard, Australian A.M.C.
Capt. I. Morgan, Australian A.M.C.
Capt. J. P. Peake, Canadian A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Second Lieut. A. McK. McRae, Royal Engineers, killed in action, youngest son of Dr. D. McRae, of London, E.

Second Lieut. I. V. Douglas, M.C., Royal Garrison Artillery, killed in action, youngest son of Dr. T. Douglas, lately of Hill House, Sapperton.

Capt. J. B. Randall, R.A.M.C., killed in action, younger son of Mr. W. Randall, M.R.C.S., of Bridgend, Glam.

Lieut. F. C. C. Devlin, West African Frontier Force, killed in action, youngest son of Capt. T. P. Devlin, R.A.M.C., of British Columbia.

Lieut. J. E. Almon, Canadian Infantry, killed in action, younger son of the late Dr. T. R. Almon, of Halifax, Canada.

Second Lieut. T. B. M. Streatfeild, Royal West Kent Regiment, killed in action, only son of Dr. T. Streatfeild, of Folkestone.

Capt. G. M. Finlay, Hampshire Regiment, late Leinster Regiment, killed in action, youngest son of Colonel W. Finlay, late R.A.M.C.

OBITUARY OF THE WAR.

ALEXANDER WARD FORTESCUE SAYRES, M.D. BRUX., D.P.H.,

LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel A. W. F. Sayres, who died of wounds on Oct. 10th, was the youngest and only surviving son of the late Rev. Edward Sayres, rector of Cold Ashton, Gloucestershire. He was educated at Sherborne and studied medicine at St. Thomas's Hospital, qualifying in 1890, and holding thereafter several house appointments. After periods of private practice at Wincanton, Woodford (Essex), and Exeter he was appointed in 1913 tuberculosis officer to the Stonehouse district of Devon. Since November, 1914, he had served in France, where he was in command of a Wessex Field Ambulance. On July 17th last he was severely wounded, losing his right leg and hand besides other injuries, to which he succumbed three months later. A superior officer writes of him: "His influence lives in the good work done by the officers and men of his ambulance, whom he trained with such zeal and energy." Colonel Sayres married in 1894 the second daughter of P. M. Muntz and leaves a widow and three children.

NOEL HUMPHREY WYKEHAM SAW, M.R.C.S. ENG.,

MILITARY CROSS,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain N. H. W. Saw, who was killed in action on Oct. 9th at the age of 25, was younger son of Samuel Saw, junior, of Blackheath. He was educated at Stratheden House School, Blackheath, and Cheltenham College, where he entered the O.T.C. He took his medical course at Guy's Hospital, where he was for four years a member of the Artists' Rifles. On the outbreak of war he applied to rejoin the Artists, but was advised to complete his medical course in October if possible, qualifying in February, 1915, and at once joining the R.A.M.C. (Special Reserve). In the following July he was sent to Mudros, and, becoming attached to the Worcestershire Regiment, went to the Gallipoli Peninsula, taking part in the evacuations at Suvla Bay and Cape Helles. After some months in Egypt and at Suez, he was present at the Battle of the Somme, where last July he was awarded the Military Cross. He met his death whilst tending the wounded, a shell landing in the doorway of the aid-post where he was working and killing him instantly. A fellow officer, who long shared the same dangers and vicissitudes, writes of Captain Saw's cheery disposition and unselfish behaviour. At college he had some reputation as an athlete, playing football for his hospital and Blackheath.

WILFRID THOMAS CHANING-PEARCE, B.A., M.B., B.C. CAMB.,

MILITARY CROSS,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain W. T. Chaning-Pearce, who was killed on Oct. 1st in action at the age of 32 years, was third son of Dr. J. Chaning-Pearce, of Ramsgate. Educated at Lindenthorpe, Broadstairs, Rugby School, and Emmanuel College, Cambridge, he completed his medical study at Guy's Hospital, qualifying in 1911, after which he held various house appointments at Guy's Hospital and elsewhere. In October, 1914, he obtained a commission in the Royal Army Medical Corps, and saw much active service in France, latterly with the King's Liverpool Regiment. In September last he gained the Military Cross for gallantry and devotion to duty. In charge of the regimental aid-post, he moved it forward, on his own initiative, through a severe enemy barrage into a newly captured position, and there attended to wounded from 16 different battalions. He met his death at the hands of a German sentry, being shot through the chest. Letters from fellow officers speak of his unfailing cheerfulness and contempt of danger. Captain Chaning-Pearce was unmarried.

DUBLIN GENERAL HOSPITAL, BOULOGNE.

The third contingent of physicians and surgeons from Dublin has arrived in France and taken up work in the Dublin General Hospital. Amongst their number are the following: Lieutenant-Colonel William Taylor, Lieutenant-Colonel H. C. Drury, Major J. Lumsden, Major C. M. Benson, Major S. H. Law, and Captain J. W. Killen.

SIR VICTOR HORSLEY'S GRAVE.

We are indebted to Messrs. Parke, Davis and Company for the accompanying photograph of Sir Victor Horsley's grave at Amara, taken by Sergeant E. Welton, R.A.M.C., attached to an Indian General Hospital. The grave is in the British Cemetery, which lies on the fringe of a palm grove, the mound consisting of earth baked and cracked in the sun.

RED CROSS FUNDS.—The Joint Finance Committee of the British Red Cross Society and the Order of St. John has received £10,000 from the Natal "Our Day" Fund collection. The contribution for "Our Day" in East Africa is £9000.

THE TREATMENT OF DISCHARGED DISABLED SAILORS AND SOLDIERS IN CIVIL HOSPITALS.

The following correspondence has taken place between the London War Pensions Committee and St. George's Hospital, and within the scope of two short letters exposes a very important position.

ENCLOSURES.

London War Pensions Committee,
43, Bloomsbury-square, W.C. 1,
18th October, 1917.

SIR,—As you are perhaps aware, the Ministry of Pensions have recently issued instructions empowering Local War Pensions Committees to enter into arrangements with civil hospitals for the treatment of discharged disabled sailors and soldiers. The scale of payment which Local Committees are authorised to make to hospitals which agree to treat discharged men is as follows:—

In-patient treatment: Not exceeding the minimum charge made in the case of ordinary patients, provided that the charge does not exceed in any case 28*s.* a week.

Out-patient treatment: Not exceeding 1*s.* for the first and 6*d.* for each subsequent attendance of the patient unless the treatment consists of, or includes, massage, electrical, X ray, or other special form of treatment, in which case the fee shall not exceed 2*s.* 6*d.* for the first visit and 1*s.* 6*d.* for each subsequent visit, to include all services.

Generally speaking, cases of wounds and injuries are sent for treatment to military hospitals, and it will be largely cases not included in these categories which would be sent to the civil hospitals. It is not possible to state precisely what number of men will be sent for treatment, but if the war continues the number will, no doubt, steadily increase.

One of the conditions upon which a local committee can enter into arrangements with a hospital is that the hospital authorities shall notify the Local Committee, in the case of in-patient treatment, of the date of admission or departure of the men as soon as either event occurs; and, in the case of out-patient treatment, immediately upon the commencement and termination of the treatment. Occasional reports will also be required in certain cases as to the men's progress.

I am directed to inquire whether the authorities of your hospital would be prepared to enter into an arrangement with the London War Pensions Committee of the nature indicated, and, if so, what would be the charge for (*a*) in-patient treatment, and (*b*) out-patient treatment. I am, Sir, your obedient servant,

(Signed) ETHEL V. W. WOOD,
Secretary.

The Secretary of the St. George's Hospital.

St. George's Hospital, S.W. 1.
Nov. 8th, 1917.

MADAM,—The House Committee of this hospital have had your letter of Oct. 18th, 1917, under serious consideration, and, as at present advised, see great difficulties in the way of their acceding to the proposals contained in it.

This hospital is a charitable institution established "for the relief of such poor, sick, and disabled persons as should appear real objects of charity," and is supported (on that basis) by voluntary subscriptions. The Committee fail to see that pensioners for whom the State has assumed responsibility come within even the widest interpretation of the trust which they have to administer.

Furthermore, it is likely that the condition of many of the pensioners sent for admission will be such that they would ordinarily be treated as out-patients, and the House Committee think it a matter of great importance that the beds of this hospital should be reserved for urgent cases that require the services of the highly skilled staff provided by the hospital and not be used by patients for whom it is wished to provide a temporary home.

Again, the question as to whether an honorary staff can be required to treat gratuitously patients for whom the State makes itself responsible is one still under discussion and has not been settled by the medical profession.

Even if the questions of principle mentioned above could be surmounted, the rate of payment proposed would not nearly cover the cost for provisions, drugs, &c., of a patient, without making any allowance for professional attendance, and it seems to my Committee quite wrong that the excess should fall on voluntary contributions.

While they do not see their way at present to enter into any such arrangements as you indicate, I am directed to remind you that the doors of this hospital are always open to suitable cases amongst pensioners in their position of sick and poor members of the community, both as out- and in-patients and without payment.

Yours faithfully,

(Signed) JAS. M. CHURCHFIELD,
Secretary.

The Secretary,
London War Pensions Committee.

The secretary to the London War Pensions Committee in making the offer to St. George's Hospital, as empowered by the Ministry of Pensions, asks for the charges per week per head that would be made for the reception of in-patients and out-patients respectively. In so doing mention is made of the limits to which charges can be met and of the class of cases that would be sent, but no allusion occurs to remuneration for medical services. The secretary of the hospital indicates that the hospital cannot, without defaulting from duty, admit pensioners of the State to an institution founded, and voluntarily supported by the public, in the interests of objects of charity, while the sums of money offered are, he adds, inadequate. The arguments here are so potent that the further reasons given for looking unfavourably upon the proposals of the London War Pensions Committee seem slight in comparison with them, but they are really of considerable significance. First, the in-patients of such a hospital as St. George's Hospital ought not to be of the class indicated by the London War Pensions Committee, the beds being required for urgent and difficult cases which can only be treated in a general hospital with full equipment. Secondly, it is doubtful whether the services of an honorary staff should be diverted from the sick poor to the benefit of State pensioners. Many of the discharged sailors and soldiers could be, and should be, treated by the general body of the medical profession at fees on a reasonable scale; the staffs of the civilian hospitals form the consultants in such cases, and reference could be had to them in all matters of doubt, with the result that the properly serious conditions should at once receive admission to, and treatment at, an institution.

MEDICAL RE-EXAMINATION OF MEN FOR THE ARMY.

The rules for the guidance of Medical Assessors in connexion with the medical re-examination of men for the Army, announced in our last week's issue, are set forth as follows in pamphlet R. 156, issued by the Local Government Board. Subject to the provisions contained in these rules, it becomes the duty of the Medical Assessors to examine medically and to grade any man who is referred to them in accordance with the rules, who attends for the purpose. The man shall be graded only after his case has been considered by at least three Medical Assessors, and after consultation between them.

At least three clear days before the date fixed for the re-examination of the man, the Medical Assessors shall send to him notice in writing of the date, time, and place fixed for the re-examination.

In the grading of a man the Medical Assessors shall proceed in accordance with the general instructions issued by the Minister of National Service to National Service Medical Boards, except in so far as is provided otherwise in these rules.

Before a man is examined by the Medical Assessors—(*a*) They shall have before them the man's medical history sheet prepared by the National Service Medical Board and the form of application—with the accompanying papers—sent to the Tribunal, or a copy of the form and papers, unless for good reason shown any of these documents cannot be obtained; and (*b*) the man shall be required to produce and surrender to the Medical Assessors the grade card issued to him after his examination by the National Service Medical Board. If in any case a man is graded by the Medical Assessors without the production of any of the above-mentioned documents, the fact and the reason shall be stated in their record of the man's grading and in their report to the Tribunal.

Before coming to a decision as to the grading of a man the Medical Assessors (if they consider this course necessary and if provision has been made in that behalf with the approval of the Local Government Board) may refer him for special examination, or may refer any question arising in connexion with the case, to a medical practitioner or institution, or may arrange for his temporary reception into an institution for special observation. If a man refuses to undergo the special examination or special observation, the Medical Assessors shall grade him on the facts available after his examination by them, in accordance with these rules; and shall also state the fact of his refusal in their record of his grading and in their report to the Tribunal.

When the Medical Assessors have come to a decision as to a man's grading they shall (*a*) record their finding in the prescribed manner; (*b*) cancel the grade card surrendered by the man, and the counterfoil of that grade card; (*c*) issue forthwith to the man a grade card in the prescribed form; (*d*) forward to the Assistant Director of Recruiting for the area the man's medical history sheet, with their finding recorded in the prescribed manner, the counterfoil of the man's new grade card which shall be attached to the medical history sheet, and the cancelled grade card and counterfoil; (*e*) return the form of application with the accompanying papers to the Appeal Tribunal, with their report as to the man's grading.

The Medical Assessors shall keep such records and furnish such reports as may be required by the Local Government Board.

The Medical Assessors may in any individual case recommend to the Local Government Board that a question of principle involved in the grading of the man be considered by the Advisory Medical Board, or such medical practitioners as may be deputed by the Advisory Medical Board for the purpose.

If the Local Government Board refer any such question to the Advisory Medical Board, the grading of the man shall be in accordance with the decision of the Advisory Board.

A further pamphlet (R. 157) contains detailed notes as to the functions of Medical Assessors and their precise mode of procedure.

SIR WILLIAM BABTIE AND THE ARMY COUNCIL.

We noted last week the statement by the Under Secretary for War regarding Sir William Babtie's resumption of his duties at the War Office as Director of Medical Services. In reply to subsequent questions in the House of Commons Mr. Macpherson stated that the Army Council, after considering the explanation of Sir William Babtie in regard to Mesopotamia, came unanimously to the conclusion that it would be a great detriment to the public military service of this country if it were deprived of the continued services of Sir

William Babtie. The Council had therefore asked him to come back to the work which he was doing at the War Office and was doing exceedingly well. Mr. Macpherson said he was perfectly certain that any soldier with any knowledge of the work of the Army Medical Service in any of the campaigns with which Sir William Babtie's name had been associated would be of opinion that the Army Council acted rightly in continuing to use the services of a distinguished servant of the State. The report of the Committee of Inquiry on the Medical Service had not been received, and Mr. Macpherson was unable to say whether or not it would be presented to the House. It had been pointed out that the Director-General of Army Medical Services had no position on the Army Council. That matter had been considered by a representative committee before the war, which decided that it was not in the interests of the public service to place the Director-General on the Council. If any important question affecting the Army Medical Service arose and his experience was necessary for the Army Council, the Director-General was welcomed there, and every opportunity was given to him of stating the whole facts connected with the problem, and of making himself as useful as possible in helping the Army Council to its decision.

FOOD-SUPPLY ORGANISATION IN CANADIAN MILITARY HOSPITALS.—Instructions in connexion with the administration, conservation, and accounting of hospital supplies of military hospitals in England supported by the Canadian public have been issued in pamphlet form for the use of everyone directly concerned in the diet and food of the invalid soldier. Old-established orders as well as recent Army Council instructions are here brought together in a little book of 47 pages, interleaved with memoranda pages so that new orders and regulations may be inserted as they are issued. This interesting compilation may possibly be found useful by others than those directly responsible to the Canadian Army Medical Service.

THE number of officers and men receiving disability allowances from the Ministry of Pensions was approximately 225,000 on Oct. 1st last.

Medical News.

UNIVERSITY OF LONDON: COLONIAL EXAMINATIONS.—At examinations held recently the following candidates were successful:—

CEYLON (COLOMBO).

First Examination for Medical Degrees.—Gerald Samuel William de Saram, Appu Hennedige Don Stephen de Silva, Alan Raja Rutnam, and Kandiah Somasundram, Ceylon Medical College.

Second Examination for Medical Degrees, Part I.—Gerald Samuel William de Saram, Victor Emmanuel Perera Senewiratne, and Leanagé Don John Telesphor, Ceylon Medical College.

UNIVERSITY OF GLASGOW.—The following degrees were conferred on Nov. 10th:—

DOCTORS OF MEDICINE (M.D.).

Robert Thomson Lelper (honours), John Lindsay Boyd (commendation), William Henry M'Kinstry (commendation), David Smith (commendation), and Simon Harry Bennett.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council was held on Nov. 8th, Mr. Charters J. Symonds, the senior Vice-President, being in the chair. It was resolved to issue Diplomas of Membership to 87 successful candidates. Sir Herbert Waterhouse was elected the representative of the College on the managing committee of the Schiff Home of Recovery. A letter was read from the solicitor of the College stating that he had been informed by Messrs. Few and Co. of the death of the Contess Rignon di Cigala, the last life-tenant of the fund constituting the Cline Bequest, and that he was making inquiries to ascertain what steps it would be necessary to take to transfer into the name of the College the French Rentes forming the fund to which the College had now become entitled.—Sir George Makins and Sir John Bland-Sutton were appointed the representatives of the College on the Board of Scientific Societies for the year 1918.

Two series of lectures which are to be given at the College by Professor A. Keith are likely to prove of interest and use at the present time, particularly to those who have to treat disabilities arising from gunshot injury. In these lectures Professor Keith proposes to review the "Anatomical and Physiological Principles underlying the Treatment of Injuries to Muscles, Joints, and Bones." In the first series, which begins in the theatre of the College, Lincoln's Inn-fields, at 5 P.M. on Friday, Nov. 23rd, the discoveries and teaching of John Hunter, John Hilton, H. Owen Thomas, Stromeyer, Adams, Wolff, &c., are to be reviewed; in the second series, beginning on Jan. 14th, disabilities and deformities as they affect the various regions of the body will be considered. The various matters to be dealt with may be seen in the Medical Diary given in another column from week to week. The lectures will be illustrated by specimens drawn from the Army Medical Collection now on exhibition in the Museum of the College. The lectures are open to all medical men.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The next quarterly meeting of the association will take place on Tuesday, Nov. 27th, at 11, Chandos-street, Cavendish-square, London, W., under the presidency of Lieutenant-Colonel David G. Thomson, R.A.M.C., at 3 P.M. On the same day and at the same place will meet: Educational Committee at 10.45 A.M.; Parliamentary Committee at 11.30 A.M.; Council at 1.45 P.M.

CLERICAL, MEDICAL, AND GENERAL LIFE ASSURANCE SOCIETY.—This society is to be congratulated upon a successful year of working during trying conditions. The report presented at the ninety-third annual general meeting, held at the society's office, 15, St. James's-square, S.W., on Nov. 2nd, shows that the net new life business was £806,305, as compared with £737,472 in 1915-16. The total premium income was £468,345, showing an increase of £12,015, and the gross interest income rose by £11,268 to £285,340. The claims by death amounted to £360,484, the total payments being within the amount expected. Special bonus payments of £260,937 have been made in addition to the ordinary outgoings. After meeting these the life assurance fund shows a decrease of £95,332, and now amounts to £6,095,669.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee, held on Oct. 9th, 19 cases were considered, and £176 voted to 16 of the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 60, of L.R.C.P. and S. Edin. who practised at Liverpool and died in 1894. Applicant has for some years acted as health visitor for a County Council, but owing to ill-health and increasing age will have to resign. Has recently had an operation on her foot. Income as visitor, £104 per annum. The Fund promised a grant of £12 per annum when she has to give up her work.—Daughter, aged 50, of M.B. Lond. who practised at Newcastle, Staffs., and died in 1885. Applicant lost all her income through bad investments, and her health is so bad that she is unable to work. Relieved three times, £29. Voted £12 in 12 instalments.—Daughter, aged 57, of M.R.C.S. Eng. who practised at Newport, Mon., and died in 1892. Has tried to earn a living by keeping a children's school, but owing to ill-health, and the high cost of living, cannot make it pay. Relieved twice, £24. Voted £12 in 12 instalments.—Widow, aged 72, of L.R.C.S. Irel. who practised in London and Wales and died in 1915. She was left entirely without means through long illness of husband. Has two daughters, one of whom is very delicate, and the other helps all she can. Has the old age pension. Relieved twice, £26. Voted £12 in 12 instalments.—Daughter, aged 60, of M.R.C.S. Eng. who practised at Wymondham and died in 1870. Applicant is quite unable to work, and the loss of her benefactress 14 years left her quite destitute. Relieved nine times, £52. Voted £12 in 12 instalments.—Daughters, aged 53 and 45 of L.S.A. Lond. who practised in London and died in 1903. One is an epileptic, and the other unable to earn a living. Joint income £69 a year. Relieved jointly nine times, £101. Voted £18 in 12 instalments.—Widow, aged 68, of L.S.A. Lond. who practised at Ipswich and died in 1901. Was left entirely without means, and has tried to earn a living by taking in lodgers. Has a family of five, four of whom are married, and only able to help slightly, so finds it difficult to get on. Relieved 14 times, £152. Voted £6 in six instalments, with leave to apply again in six months.—Daughter, aged 67, of M.D. Edin. who was a medical officer in the Army and died in 1898. Applicant is not entitled to any pension from the R.A.M.C., and her health has always been very bad, and has had to rely on help from friends, many of whom have recently died. Relieved once, £12. Voted £12 in 12 instalments.—Widow, aged 48, of M.R.C.S. Eng. who practised in London and New Zealand, and died in 1901. She was left unprovided for with three young children. She has endeavoured to make a living by taking in boarders, but her house being on the Essex coast she had not been able to make it pay since the war commenced, so has had to give it up. Her eldest son has joined a cadet school, with a view to taking a commission. Relieved six times, £71. Voted £10.—M.D. Glasg., aged 78, married, and who had practised in London. Applicant had to give up work a few years ago owing to ill-health, and the only income is an annuity his wife has, and an Epsom pension. Applicant has had several strokes. Relieved three times, £37. Voted £18 in 12 instalments.—Daughter, aged 51, of M.D. Glasg. who practised at Glasgow and died in 1897. Was left without means, and in consequence of ill-health has never been able to do much work. Has two small pensions from other societies, and is now assisting in the management of an hostel for girls, but only receives her board and lodging. Relieved three times, £30. Voted £10.—Widow, aged 56, of L.R.C.S. Glasg. who practised at Heaton-on-Tyne and died in 1899, leaving applicant unprovided for with six children. Three are now married and unable to help. Endeavours to make a living by taking in boarders. Relieved 12 times, £130. Voted £12 in 12 instalments.—Daughter, aged 56, of L.R.C.P. Lond. who practised at Birmingham and died in 1874. Endeavours to make a living by taking in lodgers, but has not been successful of late. Has only received £3 this summer. Relieved six times, £68. Voted £12 in 12 instalments.

Subscriptions may be sent to the acting honorary treasurer, Dr. Samuel West, 11, Chandos-street, Cavendish-square, London, W. 1.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

University Representation.

TEN Members to University constituencies in Great Britain are given by the Redistribution Schedule of the Representation of the People Act, which has been adopted in Committee in the House of Commons. As finally adjusted the University representation is allocated as follows:—

England and Wales.—University of Oxford, 2; University of Cambridge, 2; University of London, 1; Universities of Durham, Victoria (Manchester), Wales, Liverpool, Leeds, Sheffield, Birmingham, and Bristol, 2.

Scotland.—Universities of Edinburgh, St. Andrews, Glasgow, and Aberdeen, 3.

It was at first proposed that London University should be grouped along with the eight new English Universities, and that in combination they should return three Members. This proposal was modified by the House of Commons, which decided that London University should continue to be independently represented by a Member of its own, and that two Members should be returned by the other eight in combination. Irish University representation is not affected by the Bill.

Midwives (Ireland) Bill.

Mr. DUKE, the Chief Secretary for Ireland, has introduced in the House of Commons a Bill "to secure the better training of midwives in Ireland and to regulate their practice." It has been read a first time.

National Health Insurance Bill.

The effect of the National Health Insurance Bill, which Sir E. CORNWALL recently introduced in the House of Commons, is to make a long series of amendments in the existing Acts relating to National Health Insurance. It is a measure of 45 clauses. The first five are concerned with financial provisions. The other part of the Bill deals with such matters as qualifications for becoming voluntary contributors, rates of contribution in certain exceptional cases, membership of Approved Societies, arrears of contributions, transfers, payment of benefits, and so on.

Clause 31 contains provisions as to medical practitioners. The first subsection runs as follows:—

> Where the Insurance Commissioners in pursuance of their powers under Section 15 of the principal Act remove the name of any practitioner from any list of medical practitioners prepared under the said section they may, if they think fit so to do, remove his name from all or any of the other lists so prepared in which it is at the time included, and until such time as the Commissioners direct to the contrary that practitioner shall be disqualified for inclusion in any other list, whether in England, Scotland, or Wales, in which his name was not then so included or from which it was then removed.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 7TH.

Officers in Territorial General Hospitals.

Major DAVID DAVIES asked the Under Secretary for War whether he would explain why captains serving as *à la suite* officers of the Territorial general hospitals were allotted precisely the same kind of work, the same hours of work, and bore the same responsibility for the treatment of their patients as lieutenant-colonels and majors attached to the same hospitals, whilst they received no temporary step in rank or addition to their pay.—Mr. MACPHERSON answered: The question of promotions to complete establishments of general hospitals is under consideration, but in all hospitals medical officers are frequently employed according to their professional aptitude and line of work, and, while senior officers are naturally given the more responsible duties, there is no reason why *à la suite* officers of captain's ranks, who are often of the highest professional standing, should not be employed in the same way.

Inoculation in the Army.

Mr. LYNCH asked the Under Secretary for War whether, in view of misconceptions as to antityphoid inoculation and prejudice against that form of treatment, he would direct his attention to a recent report on the subject communicated to the French Academy of Science by Dr. Richet, which showed the boon to the soldier, as well as to the State, conferred by this system of inoculation; whether he would have this document translated and circulated in quarters where it was likely to do good; and whether similar statistics referring to British forces would be published and laid upon the table of the House.—Mr. MACPHERSON replied: I am not familiar with the document to which my honourable friend refers, but the prejudice against antityphoid inoculation in the Army is negligible, and the course which he suggests is not considered necessary.

Mr. CHANCELLOR asked whether the 3000 who fell victims to typhoid in the Army in France were merely cases or deaths; whether they included cases of paratyphoid, dysentery, and diarrhœa; if not, how many cases, respectively, of these diseases had occurred and how many cases returned as P.U.O.; and what proportions of cases and what proportions of deaths from each of the diseases named arose amongst inoculated and uninoculated, respectively.—Mr. MACPHERSON said in reply: I am not aware what the figure of 3000 is to which my honourable friend is alluding. A hundred and eighty-four officers and men have died of enteric in France and 48 of paratyphoid. There have occurred 2321 cases of typhoid (enteric) and 3871 cases of paratyphoid. The totals for dysentery are not available, and it would take a long time to work them out. For diarrhœa it would be necessary to apply to France. I have no figures regarding P.U.O. (pyrexia, i.e., fever, of uncertain origin). Of the deaths from enteric—namely, 184—62 had been inoculated and 122 had not been inoculated. Of the 48 deaths from paratyphoid 39 had been inoculated and 9 had not been inoculated.

Mr. CHANCELLOR asked whether there were 50,000 cases of death from typhoid in the South African War; if not, would he say how many cases and how many deaths, respectively, occurred in that war from this disease; and whether inoculation was extensively practised in the Army in South Africa.—Mr. MACPHERSON answered: The number of cases of typhoid fever amongst the troops in the South African War was: officers 2066, other ranks 57,684; and of deaths: officers 205, other ranks 8022. Inoculation was not so extensively practised in the Army in South Africa as it is in the present campaigns.

Exchange of Prisoners.

Replying to Mr. PETO, Mr J. F. HOPE (representing War Prisoners Department) said: We have been informed this morning that the German authorities have agreed to the conditions suggested by us for the transport of exchanged prisoners to and from Holland. The date on which the first sailing will take place now rests solely on the choice of a route between Rotterdam and Boston, and I understand that this matter is now in the hands of the Admiralty.

THURSDAY, NOV. 8TH.

Renewal of Artificial Limbs.

Major CHAPPLE asked the Parliamentary Secretary to the Ministry of Pensions what proportion of limbless men supplied with artificial limbs were returning for renewals; whether he had evidence that this was due to the premature manufacture of the limb many months before full shrinkage of the stump had taken place; and whether he would send a commission to France and Italy to investigate the system of providing limbless men with temporary limbs, costing only a few shillings, pending the shrinking and moulding of stumps to their permanent condition.—Sir A. GRIFFITH-BOSCAWEN replied: It is recognised that a large portion of the men who are fitted with artificial legs have to return for the limb to be refitted within six months or a year, but it is not possible from available statistics to state the exact proportion. The refitting is necessitated by shrinking of the stump, but this shrinking will not take place simply as the result of the passage of time, but only as a result of the pressure of the socket of an artificial limb, so that there is no evidence that limbs are being fitted prematurely. The policy of supplying a provisional limb of a simple type before the fitting of the permanent limb is one on which surgical opinion is divided. It has been adopted in some cases, and its wider adoption is under consideration. It is unnecessary to send a commission of inquiry abroad, ample evidence being available in this country.

MONDAY, NOV. 12TH.

Infantile Mortality.

Mr. ANDERSON asked the President of the Local Government Board whether he would state the official estimate of the number of children dying every week whose death was due to preventible causes; why the Government delayed legislation on this matter; whether the vested interests of large insurance companies were a contributory cause of the delay; and whether he could make a statement as to any future action it was proposed to take.—Mr. HAYES FISHER replied: In 1916 the numbers of deaths of children under five years of age registered in England and Wales was 109,966. It is, of course, not possible to state exactly how many of these were due to preventible causes, but I am satisfied that if the local authorities in England and Wales were given the same powers as are now possessed by local authorities in Scotland and Ireland, and if they used them, as I have reason to know that they would do, the work which they are now doing in regard to infant welfare could be developed so as to effect great reductions in the numbers of deaths, and, may I add, not only of infants but of mothers. My department has for some time been anxious to secure for local

authorities this extension of powers and local authorities have pressed for them, but owing to the opposition from insurance organisations legislation has hitherto been delayed.

Medical Problems of the Air Service.

In moving the second reading of the Air Forces Bill, Major BAIRD (Parliamentary Secretary to the Air Board) said in the course of his speech: One of the most important needs is a specialised medical service. It has been found by experience that flying men are subject to many peculiar physical disabilities, and research into the prevention and cure of these disabilities has advanced very rapidly. So long, however, as the flying services remain merely as appendages to the Army and Navy it is very difficult to provide for the study of these medical matters and for the special treatment of the patient. Knowledge of the subject is almost entirely limited to those few medical officers and civil practitioners who have had considerable numbers of flying men continuously under their care, and it is necessary at once to take special measures to provide special accommodation for the cases and a separate staff to concentrate on the problems which have arisen. The mere selection of candidates for the flying services has become a highly specialised business, and the standard of fitness required for flying is diverging from the standard required for the ordinary naval and military services. There are many minor physical imperfections which render a man unfit for flying, but which, if taken in time, may be removed or cured. Still more important, many precautions have to be taken to enable pilots to maintain their fitness under the severe conditions of modern air warfare. These are only examples of the necessity of securing a body of men whose sole business will be to concentrate on this particular branch of medical science, which is necessary for the welfare of our flying men.

Treatment of Shell-shock in London.

Answering Colonel CLIVE on the question of the treatment of shell-shock patients in London, Mr. MACPHERSON wrote: It may be possible to discontinue the neurological centre in London as a treatment centre in connexion with the changes which are now being made.

TUESDAY, NOV. 13TH.

Contagious Disease in the Army.

Commander WEDGWOOD asked the Under Secretary for War whether the Army Council proposed to make use of the Defence of the Realm Act for the purpose of reintroducing any provision which would have the same effect as the Contagious Diseases Acts.—Mr. MACPHERSON answered: No, Sir, I am not aware of any such intention.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: B. L. Skeggs and J. B. Orr, D.S.O., M.C.

ARMY MEDICAL SERVICE.

Col. J. W. Bullen is retained on the Active List under the provisions of Articles 120 and 522 Royal Warrant for Pay and Promotion, and to be supernumerary.

Temp. Lieut.-Col. T. P. Legg, C.M.G., to be temporary Colonel.

TERRITORIAL FORCE.

Col. W. Kinnear relinquishes his commission on account of ill-health, and is granted permission to retain his rank and to wear the prescribed uniform.

ROYAL ARMY MEDICAL CORPS.

The undermentioned officers are granted temporary rank whilst serving with No. 83 (Dublin) General Hospital:—As Lieutenant-Colonel: H. C. Drury. As Majors: J. Lumsden, C. M. Benson, S. H. Law. As Captain: J. W. Killen.

The undermentioned officers are seconded for duty with a General Hospital: Lieut.-Col. (Brevet Col.) A. B. Gemmel, Major R. A. Bickersteth, Capt. R. W. MacKenna.

Lieut.-Col. A. W. Mackintosh is restored to the establishment.

Major (temp. Lieut. Col.) J. G. Andrew and Capt. (temp. Major) J. Eason relinquish their temporary rank on an alteration in posting, and are restored to the establishment.

Temp. Major G. D. Gray to be acting Lieutenant-Colonel whilst in command of the Chinese General Hospital.

Temp. Major K. W. Monsarrat (Capt., R.A.M.C., T.F.) relinquishes his temporary commission on reposting to T.F.

E. W. Hore (Lieut.-Col., I.M.S., retired) to be temporary Major whilst employed with the Wharncliffe War Hospital.

Capt. F. E. Price is seconded for service overseas, and is restored to the establishment.

Temp. Capts. G. Schofield and K. F. Rogers, Canadian A.M.C., to be temporary Majors.

J. W. Darling, late temporary Captain, is granted the honorary rank of Captain.

Temp. Lieut. R. Franklin to be temporary Captain.

Temporary Lieutenants to be temporary Captains: A. V. Greaves (Canadian A.M.C.), R. W. Blackwell (Canadian Army Dental Corps), J. B. Anderson, J. Campbell, K. J. Aveling, G. Adam, A. Fleming, P. J. Verrall.

To be temporary Captains: L. E. Williams, H. C. Martin, C. D. Pile, D. Gillespie.

Temp. Hon. Lieut. R. A. Holmes to be temporary Honorary Captain.

To be temporary Lieutenants: W. Wright, J. M. Glasse, W. V. Naish, V. C. Pennell, W. H. Richardson, H. W. P. Young, B. A. Miller, G. M. Cameron, J. McCausland, H. M. Gilbertson, B. R. Vickers, A. S. Bradley, A. Evans, P. J. Flood, F. W. K. Lawrie, W. S. Gibson, R. V. Howell, E. W. Atkinson, G. W. Clark.

To be temporary Honorary Lieutenants: S. R. Meaker, J. R. Beaven, J. M. Bremner.

Officers relinquishing their commissions: Temp. Capt. W. J. Calder, Temp. Lieut. M. A. Harrington, and Temp. Lieut. A. S. Mellor (on account of ill-health).

SPECIAL RESERVE OF OFFICERS.

J. F. van der Westhuyzen, late Captain, is granted the honorary rank of Captain.

To be Lieutenants: W. L. Yell (from Aberdeen University Contingent, O.T.C.), J. B. D. Galbraith, I. M. Robertson, T. R. Wilson, and J. P. White, J. Macleod, and A. Riddell (from Glasgow University Contingent, O.T.C.).

TERRITORIAL FORCE.

Major L. B. Rawling is restored to the establishment.

Major A. S. F. Leyton relinquishes his commission on account of ill-health.

Major A. Wilson vacates his appointment on the permanent personnel, and is restored to the list of officers available for service on mobilisation.

Capt. (temp. Major) D. H. de Souza relinquishes his temporary rank on alteration in posting, and is restored to the establishment.

Capt. (acting Lieut.-Col.) A. A. Hingston to revert to temporary Major on ceasing to command a Field Ambulance.

Capts. R. A. Brodrick, M.C., and C. L. Lander to be acting Lieutenant-Colonels whilst commanding a Field Ambulance.

Capt. W. B. Secretan is seconded for duty with a War Hospital.

Capt. (acting Lieut.-Col.) G. S. Williamson relinquishes his acting rank on ceasing to command a Field Ambulance.

Capt. H. F. Wilkin, M.C., from Army Medical Service, to be Captain.

Capt. S. Acheson relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

Temp. Lieut. and Medical Officer W. Langran to be temporary Captain, 5th Battalion, Devonshire Volunteer Regiment.

TERRITORIAL FORCE RESERVE.

To be Captains: Capt. C. C. Messiter, from R.A.M.C.; Capt. A. Heath, from R.A.M.C.; Capt. W. J. Lacy-Hickey, from R.A.M.C.; Capt. T. Porter, from R.A.M.C.

Capt. R. G. Wills relinquishes his commission on account of ill-health.

URBAN VITAL STATISTICS.

(Week ended Nov. 10th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 11·8, against 12·0 and 12·6 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 12·5, or 0·5 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 5·0 in Blackpool, 5·6 in Leyton, and 5·7 in Lincoln to 16·5 in Exeter, 17·0 in Liverpool, and 19·4 in Sunderland. The principal epidemic diseases caused 246 deaths, which corresponded to an annual rate of 0·8 per 1000, and included 70 each from infantile diarrhœa and measles, 51 from diphtheria, 36 from whooping-cough, 10 from scarlet fever, and 9 from enteric fever. The deaths from diarrhœa, which had declined from 278 to 114 in the five preceding weeks, further fell to 70, and included 18 in London, 6 in Birmingham, and 4 each in Liverpool, Manchester, Leeds, and Gateshead. The 1186 cases of scarlet fever and 1469 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 3 below and 60 above the numbers remaining at the end of the preceding week. Of the deaths from all causes in the 96 towns 122 resulted from violence. The causes of 42 deaths were uncertified, of which 9 were registered in Birmingham, 7 in Liverpool, and 3 each in Darlington, Sunderland, and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 11·9, against 11·4 and 12·3 per 1000 in the two preceding weeks. The 254 deaths in Glasgow corresponded to an annual rate of 11·9 per 1000, and included 3 each from diphtheria and infantile diarrhœa, 2 from whooping-cough, and 1 from measles. The 89 deaths in Edinburgh were equal to a rate of 14·0 per 1000, and included 5 from diphtheria and 1 from whooping-cough.

Irish Towns.—The 145 deaths in Dublin corresponded to an annual rate of 18·9, or 3·5 per 1000 in excess of that recorded in the previous week, and included 4 from infantile diarrhœa, 2 from measles, and 1 each from scarlet fever, whooping-cough, and diphtheria. The 112 deaths in Belfast were equal to a rate of 14·9 per 1000, and included 1 fatal case each of enteric fever, measles, whooping-cough, and diarrhœa.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

REID, P., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Cleator District of the county of Cumberland.

WILSON, A. S., Certifying Surgeon under the Factory and Workshop Acts for the Hastings District of the county of Sussex.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BARNET, CLARE HALL SANATORIUM, South Mimms.—Temporary Assistant Medical Officer. Salary at rate of £250 per annum, with board, &c.

BRADFORD CITY.—Temporary Assistant School Medical Officer. Salary 8 guineas per week.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

BURY INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board, &c.

BURY ST. EDMUNDS, SUFFOLK HOSPITAL, Ampton Hall.—Assistant Resident Medical Officer. Salary £200 per annum, with board, &c.

CARSHALTON, SURREY, QUEEN MARY'S HOSPITAL FOR CHILDREN.—Temporary Assistant Medical Officers. Salary £7 7*s.* per week, with board, &c.

CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W.—Resident House Surgeon and Registrar. Salary £200 per annum.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Surgeon. Salary £200 per annum, with board, &c.

GLAMORGAN COUNTY COUNCIL.—Temporary Female Medical Officer for medical inspection of children in public elementary schools. Salary at rate of £300 per annum.

HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill, N.W.—Resident House Physician for six months. Salary at rate of £200 per annum.

HÔPITAL FRANÇAIS, 172, Shaftesbury-avenue, W.C. — Anæsthetist. Salary £25 per annum.

INVERNESS, NORTHERN INFIRMARY.—House Surgeon. Salary 3 guineas per week, and 1 guinea additional as war bonus, with board, &c.

LEICESTER ROYAL INFIRMARY.—House Surgeon. Salary £250 per annum, with board, &c.

LEOPARDSTOWN PARK, near Dublin, HOME OF RECOVERY FOR DISCHARGED NEURASTHENIC SAILORS AND SOLDIERS.—Resident Medical Officer. Salary £400 per annum, with board, &c.

LONDON LOCK HOSPITAL, Dean-street, Soho, W.—House Surgeon for six months. Salary at rate of £150 per annum, with board, &c.

NETLEY, BRITISH RED CROSS HOSPITAL.—Anæsthetist.

NEW HOSPITAL FOR WOMEN, Euston-road.—Female House Physician, Obstetric Assistant, Two House Surgeons, all for six months. Salary at rate of £50 per annum, with board, &c. Also Resident Medical Officer at House of Recovery, New Barnet, for six months. Salary at rate of £60 per annum. Also Clinical Assistants and Anæsthetists.

NOTTINGHAM GENERAL HOSPITAL.—Female Casualty House Surgeon for six months. Salary at rate of £250 per annum, with board, &c.

NORTHAMPTONSHIRE SANATORIUM, Creaton, near Northampton.—Medical Superintendent. Salary £900 per annum, with board, &c.

PRESTON ROYAL INFIRMARY.—Resident Medical and Surgical Officer. Salary £120 per annum, with board, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeon for six months. Salary £100 per annum, with board, &c.

RECUPERATIVE HOSTELS (FOR SAILORS AND SOLDIERS INVALIDED FROM H.M. SERVICES WITH NERVE-STRAIN), 43-45, Fitzjohn's-avenue, N.W.—Honorary Neurologist and Honorary Laryngologist. Also Resident Medical Officer. Salary £400 per annum.

ROTHERHAM HOSPITAL.—Junior House Surgeon. Salary £150, with board, &c.

ROYAL COLLEGE of PHYSICIANS, Pall Mall East.—Milroy Lecturer.

WARWICKSHIRE COUNTY COUNCIL.—Assistant County Medical Officer of Health. Salary £325 per annum.

WINCHESTER, ROYAL HAMPSHIRE COUNTY HOSPITAL.—Assistant Resident Medical Officer. Salary £150 per annum, with board, &c.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon for six months. Salary at rate of £200 per annum, with board, &c.

Births, Marriages, and Deaths.

BIRTHS.

STEINBACH.—On Nov. 4th, at Newton House, Knaresborough, the wife of Horace Steinbach, M.R.C.S., L.R.C.P. Lond., of a daughter.

MARRIAGES.

GLEGG—TYNDALE.—On Nov. 6th, at SS. Philip and James, Oxford, Wilfrid Glegg, M.D., M.R.C.P.E., to Marcia Edersheim, youngest daughter of the late Rev. E. F. G. Tyndale and of Mrs. Tyndale, Fyfield-road, Oxford.

MARRIOTT—FOOKS.—On Nov. 8th, by licence, at Beckenham Parish Church, Captain F. K. Marriott, M.C., R.A.M.C., to Dora Eveline, of Freathmore, Lower Bourne, Farnham, granddaughter of the late Robert Fooks, of Bridport, Dorset, and the late William Wallace Dunning.

DEATHS.

GRAHAM.—On Nov. 5th, at Purdysburn House, Co. Down, the result of an accident, Lieutenant-Colonel Graham, M.D., Belfast War Hospital, and Medical Superintendent, Purdysburn Villa Colony Asylum, Belfast.

RANDALL.—Killed in action, on Oct. 31st, John Beaufoy Randall, Captain, R.A.M.C., M.B., M.S. Lond., M.R.C.S., L.R.C.P., B.Sc., aged 28 years.

*N.B.—A fee of 5*s.* is charged for the insertion of Notices of Births, Marriages, and Deaths.*

Notes, Short Comments, and Answers to Correspondents.

THE MANDRAKE IN FOLK-MEDICINE.

THE root of the mandrake (*Atropa mandragora*, *M. officinarum*) is a ready-made amulet, resembling, as it does, the lower limbs of a human being and often a grotesque human body. A naked mannikin may suggest to primitive minds all kinds of thoughts. Hence in Scripture the fruit or root of the mandrake figures as a love-charm (Genesis xxx.), by means of which Rachel is enabled to escape the reproach of barrenness and to become the mother of Joseph. At a later period, as is shown by Professor Sir James G. Frazer in his recently published monograph on "Jacob and the Mandrakes," the root, rather than the fruit of the plant, became a sovran amulet. Solomon, according to "the Arab Dioscorides," Ibn Beithar, carried a mandrake in his signet ring, which gave him command over the jinn, or spirits. The plant, Ibn Beithar avers, is a remedy for all maladies caused by jinn, demons, and Satan. It cures lameness, cramp, epilepsy, elephantiasis, madness, loss of memory, besides affording protection against every kind of mishap. The mandrake root was well known as a charm to the ancient Greeks and to Pliny and the Romans, and it reappears in the Middle Ages as the centre of a perfect tangle of sinister superstition. As a rule the plant was held to spring up under the gallows, where it was fertilised by the drippings of corpses. In order to obtain it a laborious ritual had to be observed. It was death to dig it up, so its roots were carefully loosened, and a dog, preferably black, was tied to it, which, springing after its master or tempted by food, drew the plant out of the ground and died in the act, while the plant shrieked dolefully. The evil genius having left the plant and passed into the dog, the root might be safely handled and used as a valuable ingredient in the pharmacopœia, where it figured as a promoter of conception and as a cure-all. The Transylvanian gipsies still practise this ritual. In Syria and the East generally the mandrake is still used as a charm, and the making of counterfeit mandrakes, closely resembling hairy ape-like men, is carried on as an industry. Sham mandrakes are often sold for large sums.

"To make the counterfeit mandrake," says "A Thousand Notable Things" (London and Salisbury, 1791), "which hath been sold by deceivers for much money, do thus as followeth: Take the great double root of Briony, newly taken out of the ground, and with a fine sharp knife frame the shape of a man or a woman ['the womandrake' of our rustics] ..... with his stones and cods, and other members thereto, and when it is clean done, prick all these places with a sharp steel, as the head, the eyebrows, the chin, and privaties, and put into the said holes the seeds of millet, or any other that brings forth other small roots, that do resemble hairs (which Leek seed will do very well, or else Barley). After this, put it into the ground, and let it be covered with earth, until it have gotten upon it a certain little skin, and then thou shalt see a monstrous idol, and hairy, which will become the party, if it be workman like, or cunningly made or figured." The quotation is from Mizaldus "Another trim way for the like, is in the *Natural and Artificial* conclusions, englished by Thomas Hill."

It is curious to reflect that this quotation from Mizalde was served up to our great grandmothers as lately as 1791. Present-day rustics attach great virtue to the mandrake root, which is eaten as a cure for indigestion. The root is said to taste bitter, but the fruit can be eaten, a little at a time, and the fruit, perhaps, rather than the root, was the ancient mandragora, used as an anæsthetic or narcotic, and known as such to Shakespeare, who, always keenly reflecting the popular beliefs of his age, makes Iago say to his dupe—

> "Not poppy, nor mandragora,
> Nor all the drowsy syrups of the world,
> Shall ever medicine thee to that sweet sleep
> Which thou owedst yesterday."

The literature of the mandrake is enormous. Perhaps one of the best accounts of it was given by Mary Howitt in her poem "The Mandrake," which figured in her charming work "Birds and Flowers and Other Country Things," published in 1838.

THE address of the Department of the Medical Director General of the Navy is now 12, Charles-street, Berkeley-square, London, W.1.

The following journals, magazines, &c., have been received — Archives Médicales Belges, Veterinary Review, Cleveland Medical Journal, Annaes de Medicina e Cirurgia, Medical Review, Archives of Internal Medicine, Archives of Pediatrics, Revista Odontologica, Therapeutic Gazette, Canadian Medical Association Journal, Military Surgeon, Edinburgh Medical Journal, British Journal of Dental Science, Maryland Medical Journal, Canadian Practitioner, American Medicine.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers:—Mr. C. H. Browning and Mr. R. Sulbransen: Bactericidal Properties conferred on the Blood by Intravenous Injections of Diamino acridine-sulphate (communicated by Prof. R. Muir).—Mr. W. D. Lang: The Pelmatoporinæ, an Essay on the Evolution of a Group of Cretaceous Polyzoa (communicated by Dr. F. A. Bather.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Nov. 20th.

GENERAL MEETING OF FELLOWS, at 5 P.M.

Ballot for Election to the Fellowship. (Names have already been circulated.)

MEETINGS OF SECTIONS.

Wednesday, Nov. 21st.

HISTORY OF MEDICINE (Hon. Secretaries - J. D. Rolleston, Charles Singer): at 5 P.M.
Conjoint Meeting with the FOLK LORE SOCIETY.
Paper:
Dr. R. R. Marett: The Medicine Man.
Exhibition of Books, Pictures, &c. (at 4.30 P.M.).

Friday, Nov. 23rd.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—A. S. Blundell Bankart, G. E. C. Pritchard, C. P. Lapage): at 4.30 P.M.
Cases will be shown.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.
MONDAY.—8.30 P.M., Resumed Discussion on the Value and Limitations of Sanatorium Treatment for Tuberculosis.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C. 2.
TUESDAY.—4.15 P.M., Cases sent for Consultation. Demonstration of Pathological Specimens. 4.30 P.M., The President's Address. 4.45 P.M., Exhibition of Clinical Cases by Dr. M. Dockrell, Dr. J. L. Bunch, Dr. W. K. Sibley, and Capt. W. Griffith.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
WEDNESDAY.—4.30 P.M., Address:—Mr. A. A. C. Swinton: Science and its Functions.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W. 1.
WEDNESDAY.—8 P.M., Paper:—Mr. E. Heron-Allen and Mr. A. Earland: On Some Foraminifera from the North Sea, &c. V., On Thurammina Papillata, Brady: A Study in Variation. Mr. F. M. Duncan: An Exhibition of Lantern-slides in illustration of his paper read at the last meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
Museum Demonstrations (Pathology) for Medical Students and Practitioners and First-Aid and Ambulance Students:—
MONDAY.—5 P.M., Mr. S. G. Shattock: Inflammation and Gunshot Injuries.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.
TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.
THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.
FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N. 15
MONDAY.—2.30 P.M., Children's Diseases: Dr. T. R. Whipham. Gynæcological Diseases: Mr. F. L. Provis. Surgical Operations: Mr. E. Gillespie. 3 P.M., Medical In-patients: Dr. R. M. Leslie. 7 P.M., Venereal Clinic: Dr. Kinsella. 3.30 P.M., Special Demonstration:—Dr. T. R. Whipham: Selected Cases of Children's Disease.
TUESDAY.—10 A.M., Surgical Operations: Mr. J. Howell Evans. 2.30 P.M., Medical Out-patients: Dr. A. G. Auld. Surgical Out-patients: Mr. Howell Evans. Nose, Ear, and Throat Diseases: Mr. C. H. Hayton. X Rays: Dr. Metcalfe. 3.30 P.M., Medical In-patients: Dr. A. J. Whiting.
WEDNESDAY.—2.30 P.M., Medical Out-patients: Dr. T. R. Whipham. Diseases of the Skin: The Dermatologist. Eye Diseases: Mr. A. S. Worton. Operations:—Nose, Ear, and Throat: Mr. Hayton; 4 P.M., Eyes: Mr. Worton. 5 P.M., Venereal Clinic: Mr. E. Gillespie and Mr. Benians.
THURSDAY.—2.30. P.M., Medical Out-patients, Dr. A. J. Whiting. Surgical: Mr. H. W. Carson. X Rays: Dr. Metcalfe. Gynæcological Operations: Dr. A. E. Giles. 3.30 P.M., Medical In-patients: Dr. R. M. Leslie.
FRIDAY.—2.30 P.M., Surgical Out-patients: Mr. Gillespie. Eye Diseases: Mr. A. S. Worton. 7 P.M., Venereal Clinic: Mr. E. Gillespie and Mr. Benians.
SATURDAY.—2.30 P.M., Surgical Operations: Mr. H. W. Carson.

THE THROAT HOSPITAL, Golden-square, W.
MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
TUESDAY.—4 P.M., Dr. J. L. Bunch: Itching Skin Diseases and their Treatment.
THURSDAY.—5 P.M., Chesterfield Lecture:—Dr. M. Dockrell: The Treatment of Eczema.

BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, London.
Practical Handbook of Surgical After Treatment. By Alan H. Todd, B.Sc., M.S. Lond., F.R.C.S. Eng. Second edition. 4s. 6d. net.

ARROWSMITH, J. W., Bristol.
A History of the Bristol Royal Infirmary. By G. Munro Smith, M.D., L.R.C.P. Lond., M.R.C.S., late Colonel, R.A.M.C. (T.). 12s. 6d.

BAILLIÈRE, TINDALL, AND COX, London.
Collected Papers on Analytical Psychology. By C. G. Jung, M.D., LL.D., formerly of the University of Zurich. Authorised translation edited by Dr. Constance E. Long, Medical Officer, Education Board. Second edition. 15s. net.
Insanity in Everyday Practice. By E. G. Younger, M.D. Brux., M.R.C.P. Lond., D.P.H. Fourth edition. Price 5s. net.
Practical Guide to Diseases of the Throat, Nose, and Ear, for Senior Students and Junior Practitioners. By William Lamb, M.D., C.M. Edin., M.R.C.P. Lond. Fourth edition. 8s. 6d. net.
A System of Hand and Finger Re-Education (for Use in Military Orthopædic Gymnasia). By Captain C. W. Sewell, M.C., Sherwood Foresters. 6d. net.

CASSELL AND CO., London.
Tropical Diseases: A Manual of the Diseases of Warm Climates. By Sir Patrick Manson, G.C.M.G., M.D., LL.D. Sixth edition, revised and enlarged. 16s. net.

CHAPMAN AND HALL, London, and JOHN WILEY AND SONS, New York.
Histology of Medicinal Plants. By William Mansfield, A.M. Phar.D. First edition. 13s. 6d. net.
Pasteurisation of Milk from a Practical Point of View. By C. H. Kilbourne. 6s. net.
A Text-book of Inorganic Chemistry. By A. F. Holleman, Ph.D. Fifth edition. Issued in coöperation with H. C. Cooper. 10s. 6d.

CHURCHILL, J. AND A., London.
Elementary Hygiene for Nurses. A Handbook for Nurses and Others. By H. C. Rutherford Darling, M.D., M.S. Lond., F.R.C.S. Eng., F.R.F.P.S. Glasg. 3s. net.

GREEN, W., and SON, Edinburgh and London.
Encyclopædia Medica. Second edition. Under the General Editorship of J. W. Ballantyne, M.D., C.M., F.R.C.P.E. Vol. V. Filix Mas to Heart. 20s. net.

LAURIE, T. WERNER, London.
Practical Auction Bridge. By "Buccaneer." With the New Laws and Specimen Hands. 5s net.
In the World. By Maxim Gorkie. 12s. 6d. net.

LEWIS, H. K., London.
Otosclerosis (Idiopathic Degenerative Deafness). By A. A. Gray, M.D., F.R.S.E. 12s. 6d. net.

LIVINGSTONE, E. AND S., Edinburgh.
Lectures on Medicine: A Handbook for Nurses. By Chalmers Watson, M.D., F.R.C.P.E., Lecturer on Clinical Medicine, Edinburgh University. 4s. 6d. net.
Surgery. Part V. Third edition. (Catechism Series.) By Captain C. R. Whittaker, R.A.M.C. 1s. 3d. net.
Pathology. Part IV. Second edition. (Catechism Series.) 1s. 3d. net.

MASSON ET CIE, Paris.
Électrodiagnostic de guerre. Clinique. Conseil de Réforme. Technique et Interprétation, par A. Zimmern, Professeur agrégé à la Faculté de Paris et P. Pérol, ancien interne des Hôpitaux de Paris. (Collection Horizon.)

METHUEN AND CO., London.
Tuberculosis and How to Avoid It. By Clive Riviere, M.D., F.R.C.P. 1s. net.

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Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Nov. 14th, 1917.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Nov. 8	...	58	52	37	37	39	Overcast
,, 9	0·13	74	51	39	45	46	Cloudy
,, 10	0·05	61	45	42	41	43	Cloudy
,, 11	...	58	48	41	42	44	Fine
,, 12	...	59	52	40	42	44	Overcast
,, 13	...	49	47	40	41	41	Foggy
,, 14	...	61	54	40	46	46	Overcast

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

Communications, Letters, &c., have been received from—

A.—Mrs. E. Anderson, Donemana; Capt. B. H. S. Aylward, R.A.M.C.; Messrs. Abdulla and Co.; Lond.; Mr. H. W. Abbott, Lond.; Messrs. Armour and Co., Lond.; Messrs. Allen and Hanburys, Lond.

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N.—Nottingham General Hospital Sec. of; National Baby Week Council, Lond.; National Health Society, Lond.

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